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POSTGRADUATE WORK IN LARYNGOLOGY*

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Prior to 1918, practically no postgraduate teaching on a systematic and comprehensive scale had been successfully carried out in this country. It is true that certain progressive men in one or two of our large cities had formulated and actually presented courses in certain lines of longer or shorter duration; but of necessity these courses were limited in their scope, presenting often a single phase of a wide subject, and although excellent in their concept, could scarcely be termed comprehensive except to the few who had already been favored with a more or less broad aspect of the specialty. It was practically individual instruction in one of the component details rather than on the subject as a whole, it being often assumed that the student already possessed a broad and comprehensive view of otolaryngology. As a consequence of this, the aspiring young laryngologist became of the opinion that once the submucous resection and the enucleation of the tonsil were mastered, he forthwith had become a full fledged and competent specialist.

I fear that we older men are not altogether blameless for the younger man's point of view. His whole hospital experience has shown him that septal deviations and tonsil disease constitute perhaps 90 per cent. of operations occurring in his department; and, seeing the avidity with which they are grabbed after the chief divides the operating, small wonder is it that he comes to believe that these constitute the alpha and omega of otolaryngology.

It is precisely this attitude that we should combat, for as soon as this is universally discountenanced, the six weeks' course will disappear, never to return. Preaching duty is unpleasant, and often ill becomes him who attempts it, but it does seem to me that we, as representative practitioners in our specialty, should spread the propaganda extolling the wideness of the scope of otolaryngology and insist on adequate preparation before being applied by the practitioner. This can in no sense be interpreted as a hardship, but rather as an educational advantage which awakens the student to his possibilities instead of being held down to his limitations (i. e., tonsils and septum) through his own ignorance. To further and promote this education is now the purpose of the Postgraduate School of the University of Pennsylvania.

As the final amalgamation with the Polyclinic did not occur until toward the close of the war, it was with no little expenditure of energy that comprehensive courses were arranged to meet the needs and requirements of those men just freed from the service and about to reenter private practice. At a meeting of the faculty, it was decided that the so-called six weeks' course would be a thing of the past; and for the session 1919-1920, two courses, each of four months' duration limited to sixteen students, would be offered. Much to our surprise, more applications by one half were received than were places, as some doubt had been expressed that sufficient practitioners would find time or could arrange to devote four months exclusively to postgraduate study. The experience gained by the time the first semester had been completed prompted the faculty to propose that the length of the courses be increased to one full academic year. Briefly, this would include lectures on surgical anatomy of the nose, accessory sinuses and larynx, surgery of nose and sinuses, neurotology, physiology of the ear, surgical anatomy of the ear, surgery of the pharynx and larynx, bacteriology, operations on the cadaver, and broncho-esophagoscopy. These were all given during the morning hours. The afternoons were devoted to clinical work, particularly operative, in which the student took an active part. The course was limited to twenty men and was filled almost before the preliminary announcements were printed.

This brief outline of the experiences of the University of Pennsylvania regarding postgraduate work in otolaryngology is cited merely that we may obtain an insight into the attitude of the general profession to more or less lengthy but thorough courses, in contradistinction to the short and inefficient ones. That this should obtain in Philadelphia is probably a criterion of the attitude of the other large medical centers. It would appear that the problem of education in the specialties for the younger man is in the process of solution.

Another phase of the question is the higher or advanced education of the older man. I speak now of the specialist, possibly from one of the smaller communities, who has little opportunity of frequently visiting the city, and is limited in his observations to his own individual work. Despite his best intentions or his familiarity with current medical literature, unless he is more or less intimately associated with the latest theories and methods, a state of "rusting" must surely develop which, if persisted in, means decay and ulti-

* Chairman's address, read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

mately to becoming hopelessly out of date. These men were wont at longer or shorter intervals to arrange their work so as to enable them to leave and pursue an intensive course of four to six weeks to brush up, as it were, and thus acquaint themselves more or less intimately with the progress made by that particular specialty since their last appearance. This is about the only opportunity that this class of men have to improve their knowledge and further their skill, and therefore represents an important epoch in their medical careers. On this account, if for no other, their efforts should receive our serious consideration. Just how this eventually will work out at this moment does not appear to be entirely clear. The proposition, as it now stands, is to give one or more individuals certain advanced concentrated work for a few weeks and simultaneously to conduct uniform systematic instruction in organized classes. One can well perceive the incompatibility of these, and the difficulties that would inevitably result. If the private pupil (the short course man) was especially favored, dissatisfaction would manifest itself and rightly so among the regular students; while, on the contrary, unless this concentrated instruction was received, the private pupil would consider his time and money badly spent.

On the face of probabilities, it would appear that private courses sandwiched into the regular curriculum represent an impossibility which brings little knowledge to the student and less honor to the teacher. The demand, however, for this short time work appears (judging from my own observation) to be more insistent than ever. This corresponds very largely to some of the advanced work that was possible in Vienna before the great upheaval. To satisfy this demand might not a solution be arrived at somewhat as follows:

The present course ends in May, at which time the advanced work and final touches, so to speak, are being given. Why could it not be arranged that an intensive course of one month be included for a certain number of advanced students? The men accepted must have shown conclusively their eligibility, first, by the length of time they have been engaged in otolaryngology, and by their knowledge of and skill in the specialty. I appreciate the nicety that might arise in the differentiation of those who may or may not be eligible; but, after all, one can usually procure reliable evidence from their society affiliations.

THE SPECIAL SOCIETIES

This brings up the relations of the embryo specialist to the special societies and our attitude toward both. In the first place, every young specialist should immediately affiliate himself with one of the national organizations, such as the American Medical Association, American Academy of Oto-Laryngology, Triological Society, American Otological and American Laryngological Association, and make it a rule to attend the annual meeting, taking an active part in the proceedings. The American Medical Association, or this section, to be exact, is the great democractic organization where he will be welcomed as he stands without the formalities of an examination, a thesis or be subject to the vagaries of an executive council. This does not, however, mean that the scientific work can be measured accordingly. On the contrary, it is in this section that he will win his spurs, if spurs are to be his at all, but it will not be done through mediocre work or by bombastic phrases contained in empty discussions.

If he has original thoughts or methods to present, he can be assured that his paper will meet with serious attention and be followed by unprejudiced discussion. After a few years, admittance to fellowship into the Academy of Oto-Laryngology or Triological Society should be his ambition and, as a final goal, the Americal Laryngological or Otological Association, depending on his preferences. Many promising young men have their ambitions killed when chosen early to membership in one of the older and exclusive societies. Such a one is prone to consider membership in an intermediate society as somewhat beneath his dignity, now that he has reached the pinnacle of social activity and, as a consequence, his scientific attainments suffer proportionately. This possibility should not exist. Cooperation between the societies should result in understandings rather than rivalries. Each year discussions arise over the superfluity of societies, urging amalgamation or some form of merger. This is due to the multiplicity of memberships. Many, particularly the younger men, feel it incumbent on themselves to join as many as possible, regardless of their location or interest toward the subject. As an example, the Academy of Oto-Laryngology and the Triological Society have practically the same purpose and ideals, many men holding membership in both. This would appear unnecessary. The Academy of Oto-Laryngology is composed largely of western men, and the Triological Society of eastern. Let them hold to this geographic division and, if thought desirable, hold their annual meetings in a preselected locality on the same days, setting aside one of these days for a joint meeting. In this manner not only would both the eastern and the western men have the benefit of social and scientific intercourse, but they could dispense with the necessity of joining both societies. As our young specialist matures, his interest will be directed more and more toward either the nose and throat, on the one hand, or the ear, on the other. After he becomes a fellow of, we will say, the Triological Society, ample time and opportunity should be afforded him to discover his inclinations and thus aspire to fellowship in either the Laryngological or the Otological Society, as the case may be. This would once and for all end the perennial discussions advocating the merging of these two societies into one large body as, under these circumstances, the component membership of each would give their one specialty their undivided interest.

CONCLUSION

It seems to me that we are now in a position not only to place postgraduate work on a firm foundation, but also to advance our societies to their proper sphere, both of these eventualities to be consummated directly by the education and influence of the young man in otolaryngology.

Vitamins as Important Factor in Treatment of Pulmonary Tuberculosis.—F. Gardey remarks that many symptoms of pulmonary tuberculosis resemble those of deficiency diseases. He pleads to have the dietary in different countries investigated in relation to the prevalence of pulmonary tuberculosis and the influence of food, with and without vitamins, on the course of the disease. The organism of the tuberculous acts as if it were void of vitamins.—*Semana Médica* **27**:759, 1920.

CAUSES OF FAILURE IN THE RADICAL OPERATION ON THE FRONTAL SINUS *

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What is the matter with the frontal sinus operation? What is the reason for the widespread dissatisfaction with the results secured? The ablest answer to this question which I know of was given before this section six years ago by Dr. Howard Lothrop [1] of Boston, and later and more at length before the Section of Laryngology of the New York Academy of Medicine, in May, 1917. Indeed, so convincingly has Dr. Lothrop stated the case that I should hesitate to bring up the subject for discussion today, save that it seems to me that in spite of his clear presentation there is still much misunderstanding in regard to it.

It is a common observation that whenever a new idea obtains vogue, whether in politics, economics or what not, the tendency is for enthusiasm to carry its disciples for a time far to the extreme, to be followed later by a return to normal. This is no less true in the field of medicine.

Thirty years ago, when many of us here today were learning our specialty, the field of diseases of the accessory sinuses was just being developed. The monumental work of Zuckerkandl on the anatomy of the sinuses served to give us our first accurate information in regard to them. This was followed by many other careful and exhaustive studies, until a comprehensive understanding of them was obtained, and the importance of relief of diseases present in them was fully grasped. Hand in hand with the enlargement of our knowledge in the anatomy and pathology of these cavities went various measures for their cure, until at one time it looked as if we had at last solved the problem and that it was going to be possible to promise a cure for the pathologic condition present, whatever sinus was affected. This was particularly true of the frontal sinus.

UNSATISFACTORY RESULTS OF OPERATION

In recent years, however, a wave of disappointment at the operative results secured seems to have set in, and today it is generally agreed that the number of radical operations performed is much less than it was formerly. Indeed, some have gone so far as utterly to condemn the radical operation. A well known rhinologist in one of our largest cities has recently stated that since he has become acquainted with the use of suction, he has found no occasion to do any operative work on the nose, even of a minor nature, to relieve sinus disease.

What is the reason for such a change in our attitude in regard to the radical operation? It can only be a result of the failures that occur from it; and yet is it correct to say, as some do, that the operation is followed only by failures? A calm, dispassionate discussion of this important question is in order at the present time. At the outset, I wish to say that I feel that such a statement as the one just quoted is altogether too sweeping, and does not by any means represent the actual facts in the case. The pathologic findings at the time of operation or at postmortem are in themselves sufficient to demonstrate the incorrectness of this assertion. Numerous successful operations at the hands of yourselves and others are sufficient to refute any such sweeping statement.

What is meant, then, by failure in the radical operation? As I understand it, this may be said to be our inability to relieve by an operation the symptom or symptoms of which the patient complains, or the producing of a new symptom or symptoms as a result of the operation. It will be agreed, I assume, that there is no longer any difference of opinion among reputable rhinologists in regard to the indications for the radical operation. No one would presume to do the operation today except in an emergency, until all milder intranasal procedures have been carried out without success. While indications of meningitis, eye symptoms, etc., occasionally arise to call for the operation, the vast majority are performed for the relief of one or of two symptoms, persistent pain or discharge not relieved by intranasal measures. This is not the occasion for a discussion of the relative merits of the intranasal opening of the frontal sinus as compared with the radical external operation, although it may be said here that, in spite of the many severe criticisms, it is a fair question whether the usual objection alone—that it is a dangerous procedure—should bar us from performing it, if the merit of it as urged by Good, Halle, Ingals, Thompson and others is well founded. If it is, then, inability to relieve pain and discharge which is commonly regarded as signifying failure in the radical operation, we are at once confronted with the question, "What is the reason for this?" Such postoperative results as deformity or lacrimal duct trouble cannot be regarded as other than mere complications. To answer this question, it is necessary to recall the steps in the development of the radical operation. The first operations practiced were by the ophthalmologists, who enlarged a fistula present and did little or no curetting, which resulted in prolonged suppuration. It was soon recognized that it was necessary to clean out much more thoroughly the diseased area. Kuhnt was the first to advise removing all of the anterior wall, curetting the sinus contents, introducing a drain, and allowing the wound to close by granulations. The result from this operation was usually good, but deformity was liable to ensue. Ogston and, later, Luc practiced a partial opening of the anterior wall, curetting of the nasofrontal duct, and immediate closure of the wound. All these cases did well, to be often reinfected, however, later. Reidel was the first man to advocate the complete removal of both anterior wall and floor of the sinus. This was an exceedingly radical procedure; the results were good, but the deformity was excessive. It remained for Killian to devise an operation which included the desirable points of the others and tended to avoid to a great degree deformity by the preservation of the orbital arch.

KILLIAN'S OPERATION

When Killian,[2] in 1903, published his paper, it was felt that the last word had been said on operative measures, and that, properly performed, the Killian operation should cure 100 per cent of the cases. It is

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Lothrop, H. A.: Frontal Sinus Suppuration with Results of New Operative Procedure, J. A. M. A. 65:153 (July 10) 1915.

2. Killian, G.: Archiv. f. Laryngol. 13:59, 1903.

disappointment at the results of this operative procedure, more than any other reason, that is largely responsible for the wave of pessimism which exists at present. Numerous successes have been secured by this operation, and no one can dispute the exceeding merit contained in it. A great number of failures, however, have resulted; too great a number, in fact, to make it possible to charge them all to faulty technic. The cause must be sought deeper. What, then, actually takes place in a case in which operation has been unsuccessful, when the frontal sinus has been widely opened, and its contents entirely removed? As minor causes which interfere with or prevent healing, in addition to incomplete operation which has already been dwelt on, attention should be called to the rôle of "the lowered power of resistance, too long continued dressing, and imprudence in diet," as pointed out by Stucky a number of years ago. Usually, however, what takes place is a reinfection of the sinus, and it is this little word "reinfection" which, in my judgment, will explain the great majority of failures. To understand this more clearly, let us consider for a moment what is sought for in the radical Killian operation.

The aim of Killian in his operation was the obliteration of the sinus. To this end he proposed four main steps:

1. The removal in its entirety of the anterior wall to permit of complete exenteration of all its contents.

2. The preservation of the orbital arch for cosmetic effect.

3. The exenteration from without of all diseased ethmoid cells.

4. The removal of the floor of the sinus to allow of a falling in of the soft tissues of the orbit.

In his original article, Killian clearly states that this obliteration is not immediately secured. It usually takes a number of weeks, or even months, for every vestige of space to be obliterated. Until this is accomplished, the peristence of suppuration is to be expected. When the sinus is a small one, it is not difficult to secure such obliteration. When it is large, it is quite another matter. A reopening of the sinus after a number of months will show, as has been repeatedly pointed out, that most of it is filled with fibrous tissue, but unfilled areas are liable to be discovered. Often a hollow space will be found behind the orbital arch. Lothrop is in error in his statement that the Killian operation seeks to obliterate the sinus and to secure drainage at the same time. His one aim, as was that of Kuhnt and Reidel, was to remove all diseased tissue, in order to bring about obliteration. Unfortunately, in many cases this is not secured. The experience of Mouret,[3] is that of many of us, namely, that a wide open nasofrontal canal at time of operation is too often found to contract gradually, until in time a passage even for the introduction of a sound no longer exists. This means the bottling up of bacteria, resulting in evidences of infection in the orbit, such as swellings or abscesses, or by the return of pain and purulent discharge.

Failure, then, in the Killian operation is due to reinfection, the result of incomplete obliteration of the sinus. This is almost without exception dependent on one of two causes: either failure completely to remove the diseased contents of the sinus or of the ethmoid, or the failure of the soft tissues of the orbit completely to fill the sinus cavity as a result of the removal of the orbital roof, which forms in part the floor of the sinus, as was intended by Killian. A direct consequence of this extensive destruction of the floor is the sinking inward of the outer wall of the nasofrontal canal, resulting in pronounced narrowing, even to atresia, of the passage. Lathrop refers to this serious defect in the Killian operation, and Mouret dwells on it at length. This, in my opinion, is the controlling factor in the failure in a great majority of cases; and it is so important that I wish to emphasize it by quoting Mouret's exact words:

OPINION OF MOURET

Why I do not resect the orbital wall of the sinus and why I preserve the lacrimal bone and the orbital part of the frontonasal apophysis when the too great dimensions of the sinus compel making an opening in the orbital wall. I find these objections to such a removal:

1. Falling in of the soft periocular tissues.

2. Primary or secondary and recurring infection of the periorbital tissues.

3. Stenosis of the nasofrontal canal.

1. *Falling in of the Soft Periocular Tissues.*—In the resection of the orbital floor of the frontal sinus Jacques (and Killian) found that the soft tissues fall into the sinus cavity and tend to obliterate it. This advantage can be real for the orbital prolongation of the sinus, but does not suppress the upper frontal portion of the sinus.

2. *Primary or Secondary Infection.*—Inflammatory attacks of the soft tissues at the superior internal angle of the orbit take place several weeks, and even months, after operation, when the patient is considered well. These can keep on recurring. The explanation seems to me to be found in the fact that apart from infection externally due to a cold, the soft subfrontal tissues can contain germs, the remains of the sinus infection. These germs remain for a long time dormant to become active from some undetermined cause. By not uncovering the inferior face of the orbital floor of the frontal sinus, and thus not making a direct communication with the frontal sinus, we avoid these cases of infection.

3. *Contraction of the Frontonasal Duct.*—The chief objection which I have to the large orbitonasal resection is not only that the soft tissues fall in toward the sinus and are in direct contact with the sinus cavity and with the germs of infection which it still contains in spite of operation, but that they often lead later to stenosis of the frontonasal duct. In a small sinus, the cavity can be filled with fibrous tissue, and disappear. This does not apply to large cavities where the Killian operation is alone indicated. In spite of the operation, hollow spaces persist, especially behind the orbital arch, which serves to maintain communication with the nasal fossa. For some days following the removal of any drain put in, everything is perfect. But when seen some few weeks later, we are surprised to find the nasofrontal duct very much narrowed; at times, it is even impossible to pass a sound. We are inclined to think that this is satisfactory, and that the closure of the channel of communication means that the sinus cavity has itself disappeared by being filled with fibrous tissue. In such cases, however, I have operated a second time, and have found the sinus filled for the most part by fibrous tissue; but on a level with the sinus angle which corresponds to the orbital arch, and with the external frontotemporal angle, there was granulation tissue.

LOTHROP'S DESCRIPTION OF SINUS FLOOR

Clearly, the crux of the whole matter is to be found in the treatment of the floor of the sinus. To understand this it is necessary thoroughly to understand the anatomy of the floor. No one has studied this more carefully than Lothrop, who thus describes it:

The floor of the sinus is of the greatest surgical importance and consists of an outer or orbital portion and an inner or nasal portion. The orbital portion is comparatively thin but dense. The more or less complete removal of the facial and this portion of the floor of the sinus is carried out in some operations directed toward obliteration of the sinus, resulting in deformity according to the size of the sinus and the method

3. Mouret: Rev. de laryngol., Oct. 15, 1920.

adopted. The size and shape of some sinuses preclude obliteration. The nasal portion contains the single ostium leading to the nose and is made up of both very thin and very thick areas of bone. It is bounded externally by the suture between the lacrimal and frontal bones and somewhat by the suture between the nasal process and the frontal bone. Internally, it is bounded by the interfrontal septum, which is the upward projection of the nasal septum. . . . In front the boundary lies roughly behind the upper border of the nasal bone and the nasal process of the superior maxilla. Although these bones do not form part of the wall of the sinus, they bear an important surgical relation to its floor.

Posteriorly, the floor of the nasal portion comes to an angle made by three surfaces—floor of sinus, cerebral portion and interfrontal septum. Toward this angle is situated the ostium. The floor in the vicinity of the ostium is made up of thin bone which forms the walls of some anterior ethmoid cells. External to the ostium are the cells completed by the lacrimal bone. Posteriorly, one meets often an ethmoid cell protruding into the sinus called the frontal bulla and behind this are other anterior and other posterior cells. In front of the ostium one is apt to meet an anterior cell, and still farther in front is the so-called nasal crest of the frontal bone, and still in front, the thick and dense upper ends of the nasal bone and the nasal process of the superior maxilla. Internal to the ostium and below it are thin lamellae of bone of some immaterial variation according to whether the ostium leads to the infundibulum or still farther internal so as to open under the anterior projection of the middle turbinated bone. . . . Hence the ostium is surrounded on all sides by thin bone which may be fractured with comparative ease and thus a large opening made. If this bone is broken away, and this is what is usually accomplished by the majority of operators, what seems to be a reasonably large opening to the sinus is obtained. This may suffice for the cure of many cases, but many failures follow because the opening becomes obstructed later.

From this graphic description, it is easy to understand what parts are wont to be broken down in the attempt to enlarge the nasofrontal canal in the course of the external operation, and why, when both orbital and nasal portions of the floor are destroyed, a subsequent contracting and stenosis is wont to result.

PRINCIPLE INVOLVED IN LOTHROP'S OPERATION

The principle involved in the various intranasal openings of the frontal sinus, and especially in the operation recently devised by Lothrop, is not obliteration of the sinus, but restoration of function by removal of diseased tissue and the establishment of thorough and permanent drainage. This principle of drainage and ventilation, as a means of cure of a bony cavity, is not a new one. Many years ago, Myles recommended it for the treatment of empyema of the maxillary sinus, stating that he had repeatedly seen large polypoid masses within the antrum disappear without curetting, merely by making a wide opening in the nasal wall. The end in view, restoration rather than destruction of function, is an ideal one. The small sinus, and especially the sinus in which disease is not too extensive or too far advanced, is admirably adapted for such a procedure. It is open to grave doubt, however, whether any of the strictly intranasal operations lend themselves to the large sinus extending over to the external angle of the orbit, or to one with pronounced orbital projection. Furthermore, the significant admission of Ingals, in his last article on the subject, that the introduction and maintenance for a shorter or longer period of time of a metal tube is necessary to overcome contracture, shows that the enlargement of the nasofrontal canal from within is wont to be followed by narrowing. The Lothrop operation is in every way a distinct advance on any of the so-called intranasal methods. By means of an opening in the anterior wall, not large enough to cause deformity, he is able to determine the condition of the sinus contents, curet out diseased tissue, and then, with perfect safety, to enlarge the nasofrontal canal to the fullest extent possible, by means of rasps and burrs introduced from without. Lothrop's report of thirty-three cases which were cured by this method is in itself sufficient to call forth a large degree of favorable comment, and, since his original paper [1] read before this section in California, numerous operators have reported good results by the same method. Much is to be said in favor of it. As just stated, the preservation and restoration of function of the sinus are of the greatest value. Secondly, freedom from all danger is to be emphasized, and, thirdly, the establishment of a permanent large opening. On the other hand, as has already been pointed out, the opening into a sound sinus and the permanent removal of a portion of the bony wall of the septum are more or less serious objections to it. Lothrop's original article recommended the operation for (1) sinuses with fistulas; (2) cases in which previous operations have failed, and (3) those in which the other sinus was diseased.

It is my understanding that he now advocates it for all diseased sinuses, stating that he has seen no trouble result from the opening of a healthy sinus.

CONCLUSIONS

An endeavor to explain the causes of failures in the frontal sinus operation has prompted this paper. How to avoid such failures is not directly a part of the paper, but a brief consideration of it naturally follows.

It goes without saying that the employment of proper technic in the operation will go a long distance toward securing successful results. It is hardly necessary to add that no radical operation on the frontal sinus should be undertaken until satisfactory roentgenograms have been taken and carefully studied.

It is not to be forgotten that in the great majority of small sinuses the pathologic condition resolves itself whatever operation is performed, provided all diseased tissue is removed. The object in any operation should be either the obliteration of the sinus after complete exenteration of its contents or the establishment of permanent drainage and ventilation after removal of all diseased contents. When it has to do with large sinuses, especially with marked orbital projections, it is a question whether complete obliteration by the Killian method is possible.

The importance of giving particular attention to the curetting of the external and internal angles of the sinus is to be borne in mind. The fact that in a great majority of sinuses the diseased condition resolves when the floor of the sinus has not been removed would indicate that removal of the floor, as recommended in the Killian operation, is not necessary. Much is to be said in favor of procedures which tend to secure drainage and ventilation rather than obliteration. While the intranasal method has been much recommended, the fact that it must be performed without ocular inspection, and, further, that the tendency in this type of operation is for the nasofrontal canal to narrow or close up, is sufficient to recommend the combined internal and external method of Lothrop in place of it. The objections to the Lothrop operation would appear to be largely theoretical. The experience of Lothrop and others does not show that the opening of healthy sinuses does harm, or that unpleasant results follow the

establishment of a permanent opening in the septum. Testimony, however, is desirable as to whether all parts of a large sinus can be reached through the opening which he recommends in the anterior wall. Mouret, to whom I have previously referred, recommends in such cases that the orbital portion of the floor be removed, care being taken to leave intact the nasal portion.

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ABSTRACT OF DISCUSSION

Dr. Joseph A. Stucky, Lexington, Ky.: The answer to the question, Why is it that the radical opening of the frontal sinus is so frequently a failure?—is that we have destroyed its function. The frontal sinus, like all the accessory sinuses of the nose, is an air chamber. And our surgery must do more than surgery of any other part of the body, in that we must maintain ventilation and drainage or the function of that sinus is destroyed. Aeration is absolutely necessary to its function. I learned after many disappointments that if I treated my patient half as long and half as carefully before operating as I did after operating, frequently operation was not needed. I put the patient to bed, with restricted diet and with quiet, and then do my best to get the internal secretory organs to work, to make the mucous membrane act and bring about release from pressure. The negative pressure is frequently caused by the middle turbinate. Take the pressure off the nasofrontal canal, and do not overtreat the nose or sinus. Relieve the nasal pressure and the nose will take care of the sinus. I question whether it is possible in many cases to exenterate the ethmoid in the complete Killian operation. We cannot find and remove all the ethmoid cells, and I believe that sometimes it is bad surgery to look for them. In my judgment, no portion of the body has greater recuperative or reparative power than the attic of the nose if we would but give it a chance. I believe that a great deal of harm is occasioned by the overtreatment of cases, through interference with the function of the nose. Our efforts should be to keep the frontal sinus drained and ventilated. Of course, we occasionally see cases in which complete obliteration of the sinus is necessary.

Dr. Joseph C. Beck, Chicago: On opening in the secondary and tertiary operation on the frontal sinus by the Killian or any other method, we all have seen that the posterior surface of the frontal sinus is sequestrated and particles come out as sequestrums. That type of disease certainly would account for failures, no matter how extensive the frontal sinus operation of Killian is made, because it does not relieve that condition. Not only that surface, but the interfrontal septum may be of the same character, and the other sinuses also may be infected though not operated on. I have had such cases as that. Since the publication of Dr. Lothrop's operation I have very seldom had recourse to a radical Killian operation, and yet I want to say that the anatomy which has been described failed to bring out the differences in the skulls or heads of people. The space between the internasal crest and the posterior surface, that is, toward the crista or toward the olfactory plate, is very narow, and sometimes in the operation of Lothrop, no matter how large you make the opening, there is a narrowing and closure will occur. That is a type of bone different from that which we find along the frontal sinus. It is much more productive of osteomyelitis. You should not destroy all the epithelium of the nasofrontal duct when you do not know how large the opening is that is made.

Dr. Lee M. Hurd, New York: I did not know there was something the matter with the frontal sinus operation. I thought we were making progress on the problem of operation on the frontal sinus; that we were doing fewer radical operations and more work through the nose. As we understand it now, the more familiar we are with the anatomy of the sinuses the more we can do through the nose, with less destruction of normal tissue. If necessary to do a radical operation, you must know the anatomy, go after it and obliterate the sinus trouble.

Dr. Cullen F. Welty, San Francisco: The Killian operation is one of the most difficult operations to bring to a successful issue in the whole field of surgery. In my work I have about 80 per cent. cures. In reoperating in my own cases and also in the cases of others, I find definite lesions that had been overlooked at the primary operation or new bone has grown and become diseased. Referring to my own cases, I cannot understand why I have found such conditions following what I considered a complete operation—why I should find a shelf of bone sticking out into the cavity that I had previously gone over very carefully. Closure of the nasofrontal duct is the problem in question, and I do not know how to keep it open. It seems to me that the harder one tries to keep it open the more readily it closes. I do not have much confidence in the reinfection idea. I believe that the operation is incomplete, or that the nasal duct closes before the sinus is obliterated.

Dr. John A. Pratt, Minneapolis: One cause of failure in work on the frontal sinus is that we do not obliterate or make into one cavity all of the anterior ethmoid cells; I mean, the ethmoidal cells proper and the infundibular cells that occupy the nasal floor of the frontal sinus. Enlarging the frontal duct by rasping the tissues and cells anteriorly, we make it sufficiently patulous and still retain the mucous membrane lining the posterior wall of the duct.

Dr. G. Henry Mundt, Chicago: I am pleased to hear of ventilation in connection with sinus disease. The thing to do before operating is to select the type of operation according to the type of lesion present. If we do that, we shall not need to worry as to whether we should do an intranasal or an external operation. In the presence of a definite osteomyelitis, one can just as well do an external operation and make it complete. In the absence of definite bone involvement, an intranasal operation may be done, and by establishing ventilation and drainage it is possible to clear up the condition. If there is an osteomyelitis, obliterate the entire disease process in the sinus.

Dr. Howard A. Lothrop, Boston: Acute frontal sinusitis is due to infection; the chronic frontal sinusitis is the result of acutely infected or chronically infected passages which produce hypertrophy of the soft parts and sooner or later narrow the exit of the frontal sinus more or less. As the opening becomes smaller, the obstruction may increase the changes due to the infection, but the persistence of trouble in the frontal sinus is due to obstruction. Many patients get well without treatment. Another group of patients is improved and cured time and again by minor procedures done within the nose, such as removal of the anterior and middle turbinate and adjoining ethmoidal cells. Another group can be cured entirely by a certain amount of intranasal manipulation as close to the floor of the sinus as you can get. You are working more or less in the dark because you cannot see what you are doing, and there is danger in going beyond a certain point in intranasal operations. The intranasal operation carried to that extent fails time and again. In some cases we must resort to some type of external operation. I feel that it is much better, for cosmetic and other reasons, to do an operation that does not attempt to obliterate the sinus. If it is a small sinus, it may be obliterated anyway, but large sinuses are difficult to obliterate. As to the type of operation: The real trouble is failure to drain. Operations that destroy the anterior wall, and particularly the operation which destroys the lower wall involving the orbital region, will defeat any attempt to get decent drainage. For that reason I have come to the conclusion that we should strive to get as large an opening as nature will allow, even removing the floor of the two sinuses. I have seen cases of recurrence, due to the fact that the operator did not remove enough tissue. It is essential to remove part of the base of the nasal bones, and adjacent bone and the upper end of the septum. All that can be removed without danger and without the least handicap to the patient. The signs and symptoms on which we operate, would be pain and too much exudate, both caused by obstruction. The best way to treat the patients that cannot be cured in other ways is by the combined intranasal and extranasal operation, taking away all the anatomy that nature will allow in the individual case.

Dr. Howard V. Dutrow, Dayton, Ohio: When I read my paper on the treatment of the maxillary sinus, the consensus seemed to be that I was a little too radical in dealing with

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sinus conditions in general. I have not seen as many cases of recurring sinusitis as has Dr. Harris, and, as he has stated, the reason for the recurrence is that the operation previously performed was not complete. In dealing with a sinus, three cardinal principles are to be borne in mind: (1) thoroughness of operation; (2) drainage, and (3) ventilation. As has been said, our aim should be to establish as nearly as possible the normal condition of the sinus. I never was converted to the idea of obliteration of the frontal sinus. In the first place, it is practically impossible to do it, and the deformity is very bad. I recently operated in several frontal sinus cases which up to the present time remain absolutely normal—no nasal discharge, the openings remain patulous, and they are entirely satisfactory from every standpoint. But we should bear in mind the three cardinal principles I have mentioned.

DR. WILLIAM MITHOEFER, Cincinnati: In my opinion the chief causes of failure in the frontal sinus operation are anatomic. If we fail to consider the orbital ethmoid cells, and if during the operation we fail to remove every vestige of these cells, we shall certainly fail in our endeavor. The technic of doing the operation externally is dependent on the varying anatomic relations encountered, and in order to get the best results careful roentgen-ray study must be made before the operation. The complete removal of the orbital and infundibular cells is the most important part of the operation. I have had a series of twenty cases in which external operation was done, twelve by the Lothrop method and eight by the Ritter method, which attacks the frontal sinus from the orbital floor. The results have been far better with the Ritter method than with the Lothrop. In 50 per cent. of the cases in which operation has been performed by the Lothrop method, the nasofrontal duct closed within two or three months after operation. With the Ritter operation, we are able to clean out the ethmoid orbital cells thoroughly, and they, in my opinion, are diseased more often than is the frontal sinus. I am surprised that no mention has been made here of the many frontal sinuses which, when opened, are found to be healthy, with all the disease on the floor in the region of the orbito-ethmoid cells. Therefore, it is advisable to attack the frontal sinus from the floor and not from above. There is also another reason for doing this—if the sinus is approached from below, you attack a thin bone; whereas, from above you attack the cortex and very often an osteomyelitis may be the result.

DR. THOMAS J. HARRIS, New York: We are not having 100 per cent. successes in doing the so-called Killian operation, and we are not afraid now to say that the operation is not giving the results that we formerly thought it was giving. We are all agreed on one or two things, namely, that it is essential that a complete operation be done, and that many of our failures are due to incomplete operation. But is not the large question the failure properly to take care of the nasofrontal canal or nasofrontal duct? When it comes to discussing obliteration versus ventilation and drainage, the arguments are strongly in favor of the latter. I stated particularly that there were certain indications that demanded, without any discussion, radical external operative work. I was particularly pleased with what Dr. Stucky said because he brought out much of the milk in the coconut. I hope, then, that we shall be able to get far better results in the future than we have had in the past.

Influence of Tropical Medicine on Medical Science.—H. Ziemann remarks that few physicians realize the huge share of tropical medicine in the progress of the medical sciences in general in recent years. In an article in the *Archiv für Schiffs- und Tropen-Hygiene* **25**:14, 1921, he reviews the list of insect hosts and what has been learned of their biology, nearly all in the field of tropical medicine, although the conclusions from them apply to far wider spheres; as also technical bacteriologic and other procedures worked out in tropical medicine. The deficiency diseases were studied first and most in tropical medicine, while comparative pathology and immunology have also been largely built upon it. He adds that millions of lives and dollars would be saved if the world applied in practice the means for prophylaxis to which tropical medicine points the way.

THE VALUE OF DRUGS IN INTERNAL MEDICINE *

LEWELLYS F. BARKER, M.D.
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We are now witnessing a cautious revival of the use of drugs in the treatment of disease. During the last half of the nineteenth century pharmacotherapy fell more or less into discredit, owing (1) to a reaction against the scandalous abuse of the "shotgun prescription," (2) to the general therapeutic nihilism that followed the rise of studies in pathologic anatomy, and (3) to the growing recognition of the importance of forms of therapy other than treatment by drugs. Though in some quarters the denial of pharmacotherapy was pushed to extremes, it is now generally admitted that the movement against the indiscriminate and noncritical use of drugs, to the relative exclusion of other and often more efficacious methods of therapeutic intervention, was necessary and timely, in order that the more rational therapy of our period might emerge.

In the therapy of today, based on more accurate diagnosis and on enlarged conceptions of pathologic physiology, etiology and pathogenesis, a new hopefulness prevails. We make use now of a host of methods that are found to be trustworthy for healing, for palliating and for preventing. Along with diet, baths, climate, air, light, heat, exercise, massage, electricity, roentgen rays, radium, serums, vaccines, mechanical appliances, surgery, nursing, and psychic and social influences, drugs are gradually finding their proper place in the therapeutic armamentarium of the medical practitioner. For among the drugs of various sorts, including both natural substances and pure chemicals provided by separation or by synthesis, there are agents than can now be employed with great confidence and often with the happiest results.

DUTY OF THE INTERNIST

In the management of patients and in the treatment of their diseases, it is our duty as physicians to see to it that we do not neglect to make application of any of the agents at our disposal that may reasonably be expected to help. Briefly to survey the help offered to the physician in his daily work by modern pharmacotherapy is the object of the present symposium. The time allotted will, of course, not permit of any detailed discussion of the use of single drugs. It is, I take it, the intention of those who planned the symposium that it should deal rather with the general principles that underlie the use of drugs in therapy, and with certain examples of the application of these principles in practice. Others are to speak of the use of drugs by surgeons and by specialists; this paper has to do with their use by the internist.

Man desiring to help his suffering fellow man must not lack—indeed, has never lacked—courage. Think, for example, of the boldness of the surgeon who annihilates the consciousness of his patient and then, without trepidation, cuts into the abdomen, or excises a goiter, or removes a brain tumor! The physician also must have bravery, one might almost say audacity, when he attempts, by the use of a drug, to intervene

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favorably in the disturbed physical, chemical and biologic processes of the human body in disease.

COMPLEXITY OF CHEMICAL PROCESSES

Man's body is the most marvelous chemical laboratory in the world, a laboratory made up of several thousand billions of separate work rooms, in each of which the amount and kinds of work done differ somewhat from those in each of the others. No two liver cells, probably, are precisely alike in their chemical activities. In a single mucous membrane, the chemistry of the constituent gland cells differs markedly from the chemistry of the constituent nerve cells, connective tissue cells and smooth muscle cells. Within the channels of communication that carry fluids and solids about the great laboratory from work room to work room, chemical changes are constantly going on in the transported materials. Even the walls, the beams and the furniture of the billions of work rooms are themselves constantly undergoing chemical change. We are awed enough by the complexity of the chemical processes that go on in health; but let us not forget that in the diseased body, which is the province of the pharmacotherapist, this complexity becomes manifold. Into this apparently infinite welter of chemical transformations (though, in reality, orderly and ultimately knowable) goes the drug that the physician administers in the hope of curing, regulating or ameliorating. Its administration surely signifies courage on the part of the physician who has such a conception of the body's chemistry. The task he attempts is truly Promethean. Is it not to try "to defy Power, which seems omnipotent?"

THE DEVELOPMENT OF PHARMACOTHERAPY

Man's needs have been so urgent, however, that medical men everywhere, and at all times, have not hesitated to defy powers when they seemed malevolent; and drug therapy has, despite its besetting difficulties, become one of the successful methods by which medicine "folds over the world its healing wings."

The clinical experience of the centuries slowly supplied an important body of facts regarding the nature of disease and man's power to control it, but the formation of true guiding principles for pharmacotherapy had to await the rise of modern science. More of value has been learned regarding rational treatment by the use of drugs in the last fifty years, perhaps, than in all the centuries that preceded; for, during the last fifty years, we have gained entirely new conceptions of the nature and causes of disease.

Through chemical, physiologic, psychologic, pathologic and clinical studies we have learned much regarding pathogenesis, that is to say regarding the chains of changes in the body that follow on injuries of various sorts. Synthetic chemistry has supplied us with a host of new substances for trial as remedies. The new sciences of pharmacology and toxicology have revealed to us the mode of action of drugs and poisons, and medical students are observing for themselves, in our pharmacologic laboratories, the physiologic effects that follow the introduction of foreign substances into the animal body, and they measure some of these effects with instruments of precision. Knowing only too well that, in the diseased body, drugs often act in an unexpected manner, in ways very different from those in which they act in the healthy body, clinicians have wisely seen that the pharmacology of the laboratory, though of great value for the general advance of scientific therapy, cannot take the place of accurate clinical observation. It can do much to guide therapeutic effort and to supply criteria for judging of its effects, but the final and crucial test of the value of any therapy is that of actual clinical experience. The clinic can help the laboratory, and the laboratory the clinic; but each has its independent domain that should be conscientiously worked and zealously safeguarded.

THE NEW EXPERIMENTAL SCIENCES

Recently, laudable attempts partially to bridge the gap between the pharmacologic laboratory and the clinic, in the interests of pharmacotherapy, have been observable in the work of the new sciences of experimental pathology and experimental therapy, especially experimental substitution therapy, and experimental antiparasitic therapy (immunotherapy, serotherapy and chemotherapy).

Workers in these new sciences reproduce certain sharply circumscribed syndromes in experimental animals and then study various forms of treatment experimentally, analyzing the effects of the measures tried. With the advent of experimental pathology and experimental therapy, we can hope for the rapid development of a systematic science of therapy; and though the transfer of results of experiments in treatment of sick animals to treatment of the sick human being will always mean a leap from the known to the unknown, still this transit will from now on be made with ever lessened danger. New drugs and chemicals will in the future be thoroughly and reliably tested, not only in pharmacologic laboratories on healthy animals, but, as far as possible, also in laboratories of experimental pathology and therapy, on animals in which special diseases have been induced, before we shall feel justified in making trial of them in the treatment of sick human beings.

CLASSES OF PHARMACOTHERAPY

Now that physicians generally understand that, in all diseases or pathologic processes, they have to deal with modifications of normal (or physiologic) processes that depend on definite disease causes, modifications, moreover, that are beyond the self-regulating capacity of the organism to keep within those limits of functional activity that we observe in "health," the internist can classify his pharmacotherapeutic efforts according to the kind of effect he desires to produce. Thus, (1) he may try with a drug to remove the cause of the disease or to render it harmless (etiologic pharmacotherapy); or (2) he may use a drug that will help directly to restore a pathologically disturbed function to normal (functional pharmacotherapy); or (3) he may administer substances that will aid the organism in its modes of reaction against the disease-cause (regulatory pharmacotherapy); or, finally, (4) he may employ drugs merely to relieve single troublesome symptoms (symptomatic pharmacotherapy). Internists who, after thorough and complete diagnostic studies, carefully consider these several indications (etiologic, functional, regulatory and symptomatic) should achieve in their pharmacotherapy the highest possible success.

ETIOLOGIC PHARMACOTHERAPY

Pharmacotherapy is seen at its best when, through the use of a drug, the cause of a disease is removed or rendered harmless (etiologic pharmacotherapy) before the patient has sustained irreparable injuries. The organism can then right itself, so that its activities can

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resume their normal or physiologic course. As our knowledge of disease causes steadily undergoes increase, ever more maladies will be made accessible to etiologic therapy. Physicians of all times have considered the causal indication when they removed harmful substances from the stomach by emetics, such as mustard or ipecac, or from the intestine by purgatives, such as castor oil, calomel or magnesium sulphate. The greatest successes in causal therapy have, however, been achieved by using drugs that kill living animal or vegetable parasites within the body, or that drive them from the body into the world outside. The use of oleoresin of male fern against tapeworm, of santonin against roundworms, and of oil of chenpodium against hookworms, are paradigms of antiparasitic pharmacotherapy. The parasites of malaria were killed by the quinin contained in cinchona long before we knew that the malarial fevers were parasitic in origin. Pathogenic amebas in the intestine can be killed off by means of emetin hydrochlorid. The fungi that cause blastomycosis and sporotrichosis die when subjected to the influence of the iodids. Noteworthy triumphs have recently been scored also by etiologic chemotherapy directed against certain parasites (trypanosomes, spirochetes and spirilla) that cause African sleeping sickness, syphilis, and relapsing fever. Through prolonged experimental work, parasiticides have been discovered that have a greater affinity for and toxic effect on trypanosomes and spirilla than on the body cells and organs; in other words, poisons that are more parasitotropic than organotropic can now be used to kill certain invading micro-organisms without too much injury to the invaded host. Arsphenamin and neo-arsphenamin help us greatly in the fight against syphilis, and are undoubtedly valuable additions to our pharmacopeia. With further studies of the parasitotropic qualities of various arsenical and antimonial compounds, we can reasonably hope for satisfactory means of control of a series of tropical diseases that up to recent times have defied the efforts of therapists.

In the antiparasitic treatment of diseases of bacterial origin, experimental chemotherapy has thus far been baffled. This does not mean, however, a permanent defeat. There is much to encourage investigators to continue their search for internal disinfectants that may be safely used. The body fluids and the body cells contain, and manufacture, substances that can kill bacteria. The chemical constitution of these bactericidal substances, we can feel sure, will ultimately be discovered; the substances will, later, be made synthetically and utilized in therapy. Moreover, toxic bacteriotropic substances that are foreign to the organism and innocuous for it will also doubtless be found and used. We already know that ethylhydrocuprein will kill pneumococci, though its deleterious effect on the optic nerve makes it unsafe as yet as a therapeutic agent. But who knows how soon some enterprising experimental chemotherapist may find a related pneumococcicidal substance that is less harmful to the body, just as the discovery of the relatively innocuous spirillocidal arsphenamin succeeded that of the blindness-producing atoxyl?

FUNCTIONAL PHARMACOTHERAPY

Though less ideal and important than etiologic therapy, much good can be accomplished by the internist who, making use of a so-called functional pharmacotherapy, tries to restore to normal some function that, through disease, has become disturbed or abolished.

This can easily be made clear by citing a few examples. Thus, a patient with valvular disease of the heart may get on well for years, thanks to the reserve force of his cardiac muscle. But, sooner or later, the function of the heart muscle begins to fail, and breathlessness, tachycardia, arrhythmia, passive congestion and edema appear. In digitalis, the pharmacotherapist possesses a remedy that, properly used, will often slow the heart rate and increase the contractility and tonicity of the muscular walls of the heart so that the circulatory insufficiency will disappear. Or, a patient in whom atrial (auricular) fibrillation exists may have the normal initiation and conduction of atrial stimuli restored by means of a few doses of quinidin. Or, again, a patient whose arteries are becoming sclerotic may have spasms of the coronary vessels and the severe pain of angina pectoris that can be relieved by dissolving a tablet of glyceryl trinitrate under the tongue, which, by dilating the pathologically contracted coronary arteries, removes directly a responsible functional disturbance. Similarly, we can relax the bronchospasm of a typical attack of bronchial asthma by the injection of a few minims of a solution of epinephrin (1:1,000), and we can spur the atonic wall of the intestine to contract in a postoperative case by means of a hypodermic injection of solution of hypophysis (pituitary extract). In all these instances we make use of a functional pharmacotherapy.

Another example may be chosen from the field of metabolism. Thus, in gout, uric acid is not adequately excreted by the kidneys, being retained in the blood or deposited in the tissues about the joints. The function of uric acid excretion by the kidneys can be temporarily increased by the administration of cinchophen or neocinchophen, substances that also exert an exceptionally efficient analgesic effect in acute attacks of gout.

What we know as "organ therapy" may also be regarded as one kind of functional pharmacotherapy. If dried thyroids, for example, be given to a patient with myxedema (due to absence or defective function of the thyroid gland), the substance administered is capable of substituting for the function in abeyance and, in turn, of restoring to normal function those distant organs whose activities have undergone change through lack of the thyroid hormone.

REGULATORY PHARMACOTHERAPY

Turning next to regulatory pharmacotherapy, that form of treatment in which we administer remedies with the object of "aiding the body to react against the disease-process or the disease-cause," a good example will be seen in the pharmacotherapy of acute nephritis. In a severe glomerulonephritis, water, salt and urea are no longer adequately excreted by the kidneys, being retained in the body. The body attempts to excrete these vicariously, through the digestive tract and the skin. The physician may aid this natural reaction of the organism by using (1) a drastic purgative, like compound powder of jalap, which produces copious watery evacuations, and (2) a powerful diaphoretic, like pilocarpin nitrate, which causes free sweating. Such purgation and diaphoresis support the activities of the normal regulatory mechanisms of the body and are therefore classed as examples of "regulatory" pharmacotherapy.

In the treatment of diphtheria with antitoxin, we also employ a regulatory therapy, for, on injection of the antitoxic serum, we support the normal reaction

of the organism in its effort to produce chemical substances that neutralize the toxins of the diphtheria bacilli.

The treatment of a posthemorrhagic anemia by preparations of iron may serve as a third example of regulatory pharmacotherapy. The body reacts after severe hemorrhage by increased activity of the red bone marrow, regenerating red blood corpuscles rapidly. More iron may be required for this accelerated erythropoiesis than is available in the ordinary diet. The reactive regenerative process can be strongly favored by administering ferrous carbonate, say in the form of Blaud's pills.

SYMPTOMATIC PHARMACOTHERAPY

Symptomatic pharmacotherapy, which neither intervenes in the disease process as such nor attacks its cause, is, however, a form of therapy that is by no means to be despised. Though it is directed only toward single symptoms that injure or torment him, this therapy is hightly important for the patient, and, when successful, is the ground for much gratitude on his part. There is scarcely a symptom that is complained of by patients that physicians have not attempted to influence by pharmacotherapeutic methods. And the relief that can be afforded in many instances thoroughly justifies the attention that is given to the *indicatio symptomatica*.

It is above all in the relief of pain and of various forms of mental and bodily discomfort that this is true. We would not willingly neglect the administration of morphin in renal colic; of acetylsalicylic acid in the arthralgias; of wine or beer to paralyze certain pathologic inhibitions and to bring needed relaxation; of heroin and codein in the racking cough of pneumonia; or of the various analgesics that are effective in migraine, in neuralgias, and in the lancinating pains of tabes. Though we may deplore the abuses of alcohol as a beverage, of purgatives in habitual constipation, of sedatives in the neuroses, and of hypnotics in insomnia, we all will admit that after causal, functional and regulatory indications have been as fully met as our science permits of, there will be occasions when the merely symptomatic indication dare not be ignored.

CONCLUSION

It will be clear from what I have said that the internist looks on the use of drugs in therapy more hopefully now, perhaps, than ever before. Available drugs are of real value in curing, in ameliorating and in preventing disease, and new drugs that are useful are steadily being discovered.

Adequately to make use of the pharmacotherapeutic means at his disposal for meeting etiologic, functional, regulatory and symptomatic indications, the internist must, it is true, have mastery over a large body of facts. He must be well trained in normal and pathologic physiology and should have become acquainted with the known facts of etiology and pathogenesis. He should have learned in the pharmacologic laboratory the effects of the more important drugs on the normal animal body; and he should have had opportunity in the hospital wards, and in the laboratory of experimental pathology and therapy, to observe the changes that can be produced by drugs in disease. Very few have as yet had opportunity for the latter, but the medical schools should provide for it in the future.

Our teaching hospitals at present are, perhaps, more diagnostic institutes than institutes of therapy. It might, possibly, be wise to divide our medical clinics into two parts, patients entering one division for general diagnostic study and emergency measures, to be transferred afterward to the other division for full treatment, the effects of which could be carefully observed by the students.

The internist with such a training in the medical school as I have outlined will be prepared to institute a rational therapy wherever this is possible. He will know how to make a judicious use of empiric therapy when a rational foundation is lacking. As a matter of fact, pathology and therapy have of late years made such rapid strides that the physician can, in the majority of instances, give reasons for the therapeutic faith that is in him. For this we have to thank both the research activity of the scientific laboratories and the keen and critical observations of our better clinics.

The introduction of new therapeutic methods and new drugs can scarcely be expected from now on to be arrived at by accident, or through pure empiricism. Every new therapeutic agent should, as Magnus[1] has emphasized, be thoroughly tested in the laboratories as regards its activity and its dangers and, later, in the organized clinics, before it is introduced into general medical practice. But results in clinical experience must ever remain the final and crucial test of every form of therapy.

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ABSTRACT OF DISCUSSION

Dr. Henry A. Christian, Boston: I wish to emphasize two statements Dr. Barker made. The first of these is, "Clinicians have wisely seen that the pharmacology of the laboratory, though of great value for the general advance of scientific therapy, cannot take the place of accurate clinical observation." The second statement is, "The final and crucial test of the value of any therapy is that of actual clinical experience." Mark the words: "accurate clinical observation" and "actual clinical experience." Herein must of necessity lie much of the progress in treatment, if progress we are to have. Let me advise you in treatment to have an intelligent skepticism in regard to treatment. This is very different from therapeutic nihilism. Be wary of the words of the itinerant drug vender and of the literature flooded in on you by the drug houses. This is not to decry the very genuine efforts that the manufacturing pharmaceutical houses are making to improve medicaments and to discover better ones. It is, however, to say: Listen and read in a critical spirit, ready to try the new when evidence is good that it is of value, but realize that much that is printed is not based on what Dr. Barker calls accurate clinical observation, but results from a confusion as to cause and effect by reason of lack of accurate clinical observation and failure to think clearly and critically. Perhaps the best example of the worst that is being done at present lies in the literature and the claims made in so-alled studies of endocrinology, and the attempt therein to apply to unknown conditions unknown drugs with poor observation of results. Is it any surprise that the conclusions are far from sound? It is within the power of every practitioner to observe accurately and to record carefully his observations, and to contribute thereby to advance in therapy. And, perhaps, as a corollary to that, it is fair to say that a lack of advance in therapy has come in considerable part from the failure of the practitioners of the country to do these simple things. Continued improvement in medical education must of necessity furnish better practitioners more capable of carrying on these types of observations, and the result can only be improvement in our drug therapy, as well as in other methods of therapy. Finally, let me emphasize the importance of treatment. It does much good in making our patients more comfortable, and

1. Magnus, R.: Allgemeine Pharmakotherapie, in Krause and Garrè: Lehrbuch der Therapie der innerer Krankheiten, Jena 1:71-143, 1911.

thereby it must have a very manifest effect on the course of the disease. After all, we deal with many diseases of an acute or chronic nature whose exact cause we do not know, and we are confronted with an extremely large group of patients suffering from those chronic conditions to which we probably can bring only amelioration of suffering and a retardation of the processes, and in that group symptomatic treatment is of great importance.

DR. FRANCIS H. MCCRUDDEN, Boston: One sentence of Dr. Barker's paper, "Our teaching hospitals at present are more diagnostic institutes than institutes of therapy," might well be made the text for many papers. Students go to the medical school to learn how to treat sick patients. In their courses in internal medicine, emphasis is laid on diagnosis, not on treatment. The wrong point of view of their function as physicians which they acquire is likely to affect their activities for a long time even after they leave school. The internist deals largely with chronic disease in which improvement in functional efficiency of the patient, rather than restoration of structural integrity, is the aim of therapeutics. An intelligent understanding of the functional therapeutics of chronic disease is much more difficult than an understanding of the theoretically more ideal direct methods of treatment. The methods of treating chronic diseases should be emphasized in the teaching of therapeutics: first, the importance of functional efficiency and, second, quantitative diagnosis, as distinguished from qualitative. As a rule, we must make the best of the organ which is structurally imperfect, and the first step in improving functional efficiency of such an organ is a recognition of the degree of impairment of function. The term "quantitative diagnosis" should, therefore, be freely employed, and the student be made to understand fully all that it implies. The next step is to improve functional efficiency. When equilibrium between working powers of organs and the work they are called on to do is lost, two groups of therapeutic measures are used to restore equilibrium. First, methods which stimulate organs to do better work, and, second, methods which decrease demands on organs. Rational therapeutics deals largely with questions of how and when to apply such methods. It is largely a branch of applied physiology. This is the broad point of view which should be emphasized in teaching therapeutics to students. Therapeutics should be taught in a clinic as a separate course from pharmacology, and should be the most important course in a medical school.

THE VALUE OF DRUGS IN SURGERY*

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CLEVELAND

With increasing knowledge of the laws governing the operation of the human organism, surgeons are placing increasing dependence on methods which conserve the organism, and the use of drugs in surgery is becoming limited to those which serve this end.

As the condition of the organism as a whole depends on the state of its ultimate component units, the cells, it follows that the determination of methods of value to the organism depends on the laws which govern the cell.

LAWS GOVERNING THE CELLS

The cells whose condition is of primary importance to the surgeon are the nerve cells, the liver cells, the kidney cells and the heart muscle cells. These cells are all governed by identical laws, which are as exact as the laws of physics. A study of the structure of the cell gives the clue to its prime function and therefore to the methods whereby it may be conserved and repaired. The nucleus is separated from the body of the cell, and the cell is separated from the neighboring cells by a selective semipermeable membrane. The nucleus and the body of the cell cannot both be best stained by the same medium, but differential stains are required, that is, the nucleus takes an acid stain, and the remainder of the cell takes a basic or alkaline stain.

The cell content consists in the main of colloidal particles suspended in water. Two colloids of different reactions separated by a semipermeable membrane constitute an electric battery. A cell, therefore, is a diminutive electrochemical unit or battery.

It follows that the vitality of the cell must depend on three principal factors: namely, oxidation, the maintenance of the normal state of permeability of the cell membranes, and the maintenance of the normal acid-alkali balance between the body of the cell and the nucleus.

Of these three, the principal source of energy is oxidation. Oxidation produces acids. It follows that the state of the acid-alkali balance in the cell becomes the measure of its vitality. If there has been excessive oxidation, or if the internal respiration of the cell has been minimized or prevented, then the normal acid-alkali balance between the nucleus and the cell body can no longer be differentiated by staining, that is, the cell has lost its difference in potential, which means that it has lost its power of function.

The loss of difference in potential in the cell may be due either to an excessive concentration of alkalis—alkalosis—or to an excessive concentration of acids—acidosis. The former state may be produced experimentally, but is rarely found clinically. Acidosis, on the other hand, is a common condition. It may be due to excessive oxidation, produced by excessive exertion, by fear, worry or anxiety, by trauma, by infection, by ether in the stage of excitation, by the injection of excessive doses of epinephrin, of strychnin, of iodin, by the ingestion of thyroid extract, by hyperthyroidism. That is, an excessive concentration of acids in the cell may result from the excessive production of acids as a result of any one or any combination of the excitants of metabolism. On the other hand, an excessive concentration of acids may result from the retention of acids in the cell as the result of diminished liver function, diminished kidney function, interference with pulmonary activity, or want of sufficient water.

The acid-alkali balance—potential—within the cell may be lost also as the result of a change in the permeability of the cell membranes. One of the common clinical causes of changes in the permeability of the cell membranes is ether anesthesia. In the first stages of ether anesthesia, the permeability of the cell membranes is increased, and excessive oxidation results, which is manifested by the stage of excitement. In this state, the rate of oxidation may even be trebled, causing an accumulation of acids within the cell, and consequent diminution of the difference in potential, with ultimate exhaustion. On the other hand, in deeper or surgical anesthesia, the effect is reversed; that is, the permeability of the cell membranes not only is not increased but is greatly diminished. Consequently, the cell is not only cut off from fresh supplies from without, but the escape of its own waste products is prevented. It follows that the internal respiration of the cells fails, and consequently the difference in potential between the nucleus and the cell body is rapidly lost, producing exhaustion, and ultimately death.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Ether is not the only anesthetic that may destroy the acid alkali balance—the difference of potential—of the cell. Deep nitrous oxid anesthesia also may materially lessen the difference in potential by lessening intracellular oxidation.

Finally, the most inclusive cause of the loss of difference in potential, hence of loss of cell energy, is loss of sleep, therefore the value of hypnotics, narcotics —bromids—opiates. Unbroken loss of sleep leads inevitably to death.

It follows that for the maintenance of its essential difference in potential the cell depends on (*a*) an abundance of fresh water; (*b*) oxygen; (*c*) rhythmic alternations of periods of rest and sleep.

These fundamental requirements are the final guide to the surgeon in his selection of conserving and remedial agents.

VALUABLE AGENTS IN SURGICAL PRACTICE

To assure a sufficient supply of water and oxygen, it is essential to maintain an adequate circulation of blood bearing plenty of red cells, and to supply an abundance of fresh water. In cases of secondary anemia, therefore, a transfusion of blood is prescribed; and from 3,000 to 4,000 c.c. of water to which procain has been added to make a $\frac{1}{32}$ per cent. solution (Bartlett's method) is given subcutaneously every twenty-four hours. To assure that the supply of water and oxygen is carried to every cell with sufficient force and in sufficient volume, the heart muscle must be conserved and if necessary restored. To this end, if the impaired condition of the myocardium demands it, operation is preceded by the administration of the tincture of digitalis, 20 minims every four hours for fifteen doses. After operation, digitalin in $\frac{1}{25}$ grain doses is given hypodermically, every two hours for eight doses or until the tincture of digitalis can be given by mouth in the dosage and frequency noted above. This is continued until the desired effect is secured, unless nausea occurs, when it is discontinued at once.

In brief, therefore, to insure an adequate supply of fresh water and of oxygen to the cells, as may be required in the individual case, we utilize the transfusion of blood and the subcutaneous injection of water, both of which are driven through the organism with increased force and certainty as the result of digitalizing the myocardium.

Excessive activation by fear, worry or anxiety, with the resultant concentration of acids in the cells, is controlled by management, aided, when necessary, by bromids or by morphin; by using the readily taken, comparatively innocuous anesthetic, nitrous oxid oxygen; by administering the anesthetic in the patient's room and taking him to the operating room under anesthesia, and in selected cases, by the preoperative administration of morphin and scopolamin for the purpose of maintaining an even metabolism, that is, an undisturbed internal respiration.

Excessive stimulation of the nerve cells by the trauma of the operation is controlled by local, regional or spinal anesthesia with procain—the safest local anesthetic for general use. Postoperative activation is controlled by the application of heat, by morphin, by blocking the traumatized area with quinin and urea hydrochlorid.

Atropin is used to prevent mucus, especially in operations on the respiratory tract. It is of especial value in laryngectomies, when it is used to prevent the reflex inhibition of the heart which may result from interference with the superior laryngeal nerves.

For the control of excessive metabolism as in postoperative hyperthyroidism, refrigeration by literally packing the patient in ice is specific. Bromids and morphin lessen the drive and aid in securing the state of negativity essential for restoring the difference in potential in the cells. In certain cases in which morphin acts as a stimulant rather than a narcotic, large doses of bromid given by rectum will quiet the patient.

Thyroid extract and thyroxin are used to supply the physiologic need in cases of thyroid deficiency; calcium lactate and parathyroid extract in cases of parathyroid deficiency.

Epinephrin is employed as an aid in the diagnosis of hyperthyroidism in borderline cases (Goetsch test). It is of value also in asthmatic attacks due to bronchial construction.

Magnesium sulphate is employed as a diagnostic aid in the detection of gallbladder disease or deficiency (Lyon test).

As we have indicated, oxygen, water, inhalation anesthetics, especially nitrous oxid oxygen, local anesthetics, especially procain, the bromids, morphin, scopolamin, atropin, thyroid product, and epinephrin have a definite value in surgical practice.

In addition to these, it may be well to mention certain other agents which are rarely used and some of which are of doubtful value.

Alcohol and strychnin are rarely used. The former is of value in certain apathetic infections, especially in the aged or in those who have been accustomed to it. In general, with the exception of the employment of digitalis to stimulate a weak myocardium, the use of stimulants is scarcely worth while and may be harmful.

The use of a solution of sodium bicarbonate as an agent for combating shock is of little, if any, more value than water. In both war and civilian practice, it has been found that solutions of gum acacia not only have no value but probably have caused a number of deaths. Glucose solutions are of little value.

ANTISEPSIS AND ASEPSIS

The increasing tendency to consider as the final criterion of a therapeutic measure its value in protecting the working cells of the body against fatigue, as compared with older methods, may be compared to the contrast between antisepsis and asepsis, for the former importance of antiseptics has been largely replaced by the promotion of the natural defenses against infection which are present within the organism itself.

The surgeon today knows that the key to the defense against infection possessed by any part of the organism is its blood supply; that abundant blood and normal blood augmented by physiologic rest supply the natural "asepsis."

Nevertheless, certain antiseptic agents retain a valuable, if comparatively small, place in surgical therapy. Of these, the best is surgical solution of chlorinated soda (Carrel-Dakin solution). Beck's bismuth paste is useful, especially in the treatment of old sinuses. A 5 per cent. solution of picric acid in alcohol and tincture of iodin are about the best skin antiseptics. The tincture of iodin is useful also as an intra-uterine antiseptic application. Iodoform, despite its disagree-

able qualities, still holds an important place as an inhibitor of infection. Surgical experience in the war taught us that contamination of raw tissue can be prevented or minimized (*a*) by preventing pooling of the wound secretions, and (*b*) by preventing the contact of contaminated with uncontaminated raw tissue. The latter requisite can be admirably assured by placing between the tissues a single layer of gauze lightly impregnated with iodoform. The application of this principle has proved of especial value in resections of the rectum and of the large intestine for cancer.

Much might be added regarding many other admirable agents of value in the irrigation of cavities, cleansing the skin, and so forth, but the relative value of any of these as compared with methods which utilize the natural defenses and reparative forces of the patient may be summed up in the subjoined excerpt from a previous paper

> Good surgery is the exponent of no single method. It recognizes the anatomical and environmental situations in which chemical and physical agencies are useful. Good surgery exploits physiologic rest and fluids and sleep; it gives little pain. Good surgery evokes confidence; and confidence begets rest; and rest begets restoration. Good surgery, then, makes use of antiseptics and physical forces, just as it uses incisions, counter-drainage, revisions, skin-grafting, blood-transfusion. Good surgery does not substitute an easy formula for its principles; above all, it always is dissatisfied with its work and always is open to suggestion.

Anociation and asepsis leave but little place for the heroic medication of the past.

RESULTS AT LAKESIDE HOSPITAL

By the extension of employment of anociation and asepsis, the mortality in the last 6,261 operations at Lakeside Hospital has been reduced to 1.6 per cent. Our series have included fifty-eight colostomies and resections of the rectum and large intestine for cancer, with one death, and seventy resections of the stomach and gastro-enterostomies for cancer and ulcer of the stomach, with one death. Anociation and asepsis have made possible a series of 227 consecutive thyroidectomies and 180 consecutive ligations, that is, 407 consecutive thyroid operations for hyperthyroidism without a death. These are not selected cases. No patient was rejected and many were dying. Among the last 500 thyroidectomies, there have been five deaths, a mortality rate of 1 per cent., among the last 500 ligations, two deaths.

Worth while medication in surgery is that which is based on the principle of conservation and restoration of the cells, as interpreted by modern conceptions of the laws that govern the human organism.

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ABSTRACT OF DISCUSSION

DR. JOHN J. GILBRIDE, Philadelphia: A recent paper on goiter by Dr. Crile emphasized how important it is for the surgeon to be competent to manage his own cases, for all surgeons are not so fortunate as to have skilled assistants, such as biochemists, physiologists and others, always available. It would be very laudable, of course, and most desirable, for those of us who could, to have associated with us capable men to handle such phases of the subject. However, there is no one who is in a better position to know and to recognize the onset of menacing symptoms than the surgeon, and consequently treat these patients early.

THE USE OF DRUGS IN INFANCY AND CHILDHOOD*

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In times past, many have considered pediatrics nothing more than the practice of internal medicine, with a formula for the reduction of the dosage of drugs. Within the last twenty-five years, however, there has been a tremendous development in this branch of medicine. A visible manifestation of this development is the establishment of special chairs in universities, both in this country and abroad. Perhaps the most important development of the intensive work in pediatrics has been in the realm of preventive medicine; drug therapy has not kept pace with the progress in other fields of this specialty. The interest which the profession at large has taken in pediatrics is perhaps best illustrated by the establishment of local and regional pediatric societies.

The literature of the last few years on drug therapy in infants and children indicates the slight effort that has been made in recent years in the development of such therapy. The lack of interest in this work during the rapid expansion of pediatrics in general is therefore evident.

RELATIVE DOSAGE

The main point in the administration of drugs to infants and children still is the reduction of the adult's dose. Drug therapy in infants and children, therefore, not only shares all the faults it has in the adult, but since the various formulas for calculating the dosage are based on weight or on age, or on weight and age, a specific error is introduced, for the child is not a pocket edition of the adult, and the two cannot be compared pound by pound. During growth, the relationship of the various organ-systems of the body to one another shifts, and with this process, the relationship of each organ-system to the whole body shifts. For instance, in the new-born infant about 23 per cent. of the total weight is in the muscles; in the adult about 43 per cent. is in the muscles. The relative weight of the infant's liver is about two and one-half times greater than that of the adult. This is of great importance, for a number of drugs do not distribute themselves equally over the body, but have certain affinities for various tissues or constituents of tissue. The affinity of many narcotics for lipoid tissue is well known. Some further factors enter into consideration. The administration of chloroform to an adult dog readily produces necrosis of the liver, but the production of this necrosis of the liver is far more difficult in the pup, where the relatively large amount of glycogen exercises a protective influence.

It is stated that certain drugs are well tolerated by the infant, while others are not. This statement also rests on a comparison with dosages for adults, and emphasizes the necessity of a study of the pharmacologic action of various drugs in the infant. The functional activity of some organs develops in the course of growth, like that of the sexual glands. Their internal secretions exercise an influence on the organism, and, while it is a fact that we know the chemistry

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* From the Section on Pediatrics, Mayo Clinic.

of the secretions of only two glands, the suprarenal and the thyroid glands, we must assume that the activity of the secretions of other glands also depends on one or more chemically well defined substances. These substances, whatever their derivation, may have a decisive influence on the reaction of the organism to drugs. In this connection, the results of Le Heux, from the laboratory of Magnus,[1] are of the greatest importance. They confirm the theory that the sodium salts of acetic acid and pyruvic acid increase the stimulation of the isolated intestine, and supply strong evidence to indicate that this stimulation is due to the formation of ester of acetic acid and pyruvic acid with the cholin normally present in the intestinal walls.

These factors are sufficient to prove that the administration of drugs to infants by formula is very unsatisfactory, and depends entirely on chance. Drug therapy in the infant has suffered, like that in the adult, from a number of mistakes and fallacies. First, only a small number of drugs exercise a rapid and striking effect, either by destroying the main causative agent of a disease or by producing a lasting favorable effect on it. Second, there is therapeutic nihilism, which is both fashionable and convenient; some of its roots strike deep into the quagmire of muddled observations. It is a remarkable phenomenon in the history of medicine that even the keenest observers lose their power of criticism and judgment when discussing therapy. Third, carefully controlled studies of the action of drugs in the infant and in the child exist, if at all, only in limited numbers.

DRUG GROUPS

In order to establish a standardized list of drugs essential to the treatment of the diseases of infancy and childhood, I selected from the pharmacopeia a list of sixty-one drugs. This list I sent to eighty-four men who are limiting their practice to pediatrics, with the request that they check the drugs listed and add to them any drugs which they considered essential in their practice. Of the eighty-four men, sixty-four responded. I wish to thank these gentlemen for giving me the benefit of their experience. A short analysis of the responses is of interest.

Many of the drugs were grouped under special headings, such as antispasmodics, laxatives, cardiac stimulants, and antipyretics. Only mercury in some form and santonin, on the list submitted, are used by all sixty-four men. Besides these, silver, arsenic, iron, sodium bicarbonate, cod liver oil, and at least one representative of the opium series, the antispasmodics, heart and circulatory stimulants, hypnotics, laxatives, antipyretics, anthelmintics, and urinary antiseptics, were used by sixty men of the sixty-four. One half of the men used forty-three of the drugs indicated on the list.

A number of men added drugs to the list. Fourteen added milk of magnesia, and three or more added benzyl benzoate, hyoscyamin, chloroform, agar-agar, creosote, chenopodium, glycerin, and tincture benzoin compound. One man added thirty-eight drugs to the list.

The drugs in this list can be readily divided into four groups. The drugs in the first group have specific indications; for example, mercury, arsenic, quinin, santonin, male fern, etc., act directly in destroying parasites, and the drugs such as silver, hexamethylenamin and the salicylates have definite antiseptic powers for destroying bacteria. The indication for the use of these drugs is usually given with the diagnosis of the disease. The drugs in the second group regulate the function of the different organs; for example, digitalis, the group of laxatives, and the diuretics. The third group is essentially for the symptomatic treatment of disease, as morphin for the relief of pain. The fourth group consists of drugs that are used for a specific purpose, and for practically no other, such as phosphorus in the treatment of rickets and spasmophilia, mustard for counterirritation, and phenol (carbolic acid) for the infections of the middle ear. This classification does not differ greatly from the old pharmacopeial classification of drugs which rested on the *indicatio vitalis, causalis, morbi* and *symptomatica*.

It is not my object here to attempt an enumeration of the indications for the use of these various drugs. I merely wished to collect a group of drugs that, in the experience of a large number of pediatricians, cover the needs in the practice of pediatrics.

INDICATIONS FOR DRUG THERAPY

The importance of a definite indication for the use of drugs is even more essential in infants and children than it is in adults. As Dr. Jacobi has said, "Most conditions in childhood right themselves without any medication," and, "I believe we are justified in assuming that the man in general practice uses more medicine, rather than too little, for the welfare of his little patients."

The tendency toward homeopathy, particularly in the treatment of diseases of children, so much in vogue about thirty-five years ago, when adults were treated by regular physicians and children by homeopathic physicians, was the logical outgrowth of too much medication. Today the homeopathist, the indications for drug therapy being much more finely drawn, has almost disappeared from our midst. The public, too, has become educated, so that, as a rule, it appreciates the advice given by the physician more than the prescription he writes.

In infancy, in particular, the use of drugs should be limited to definite indications, and these indications are usually for a single drug. The younger the child, the greater the danger of upsetting its gastro-intestinal functions by medication. Diseases of the infant, of whatever nature, frequently manifest themselves by gastro-intestinal symptoms. Indeed, in many cases they are the only symptoms, and it is very important not to derange the gastro-intestinal tract still more. The treatment of parenteral infections by repeated catharsis is perhaps the best example of the danger of treatment without a diagnosis.

PROBLEMS OF ADMINISTRATION AND DOSAGE

It has been the general experience that the difficulties of administering medicine are not so much those of giving certain medicines to children, as those of giving any medicines to certain children. In this connection two very important points must be emphasized: first, it is usually children who are unwilling to cooperate who are unwilling to take medicine, another example of the spoiled child; and, second, the physician fails to appreciate the importance of his personal relationship with his little patient. The fact that a child

1. Magnus, R.: Cholin als Hormon der Darmbewegung, Die Naturwissenschaften, 1920, No. 20, from a lecture held Feb. 2, 1920, in Bataafsch Genootschap voor proefondervindelyke sysbegeerte, at Rotterdam.

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promises to take the medicine is very much better than any assurance on the part of the mother or nurse to administer it.

We are not limited, in our administration of medicine, to the oral route, but, as it is by far the simplest method, it is most frequently used. When a child, either because of mood or as the result of illness, is unwilling to take medicine by mouth, it can very easily be given with a nasal tube. The rectum, too, can be used as a means of administering drugs, particularly the drugs, such as chloral hydrate, that are likely to irritate the stomach.

The dose of chloral hydrate by rectum as usually given is about twice the dose by mouth. Intravenous injection insures quicker action with a smaller dosage. It must be remembered, however, that, for a drug to develop its pharmacologic action it must be in contact in sufficient concentration with the tissues to be acted on, for a definite length of time. This means, the more rapid the absorption, the lower the dose, but, on the other hand, the shorter the action, the greater is the necessity for repetition of the dose, for constant action. Another factor to be considered in this connection is the rapidity of elimination, as shown by Ramsey and Groebner's [2] work with mercury.

The treatment by drugs of diseases in infancy is influenced in its effectiveness by the factor of nutrition and growth. This is perhaps best expressed by the statement that as long as a child eats and digests well there is a good chance for recovery. A drug which acts favorably on the disease focus but interferes with the nutrition of the child is harmful. The effect of the so-called tonic treatment during the active stage of disease is another example of the failure to recognize the nutritional factor in disease.

I shall call attention also to the necessity of objective standards for the value of drug therapy. At present almost all our judgment is subjective, and the results of drug therapy depend to a large degree on whether the physician is an optimist or a pessimist. Until we have objective standards, the relative values of various modes of treatment must, of necessity, be difficult to determine. It behooves us all, therefore, to apply objective measurements, wherever possible, in our studies of drug therapy.

My original plan was to include in this paper a table of the doses of drugs for the different age periods. On second thought, however, it seemed too important a matter to be decided arbitrarily by the opinion of any one physician; such a table, dependent as it is on experience rather than experiment, is a problem that calls for cooperative effort. I was strengthened in this belief by looking over Lavialle's tables on the dosage of drugs for the first two years, which appeared in Variot's recent textbook.[3] He designates a dose for the first month; for older infants he multiplies the dose by the number of months the child is of age, merely another mode of dosage according to age, without any consideration of the peculiarities of infancy and childhood.

In concluding I wish to propose that the Section on Pharmacology and Therapeutics recommend to the proper authorities the appointment of a committee for the purpose of studying the problem of the therapeutic action of drugs and their dosage in infancy and childhood.

LIST OF DRUGS SUBMITTED TO PEDIATRICIANS

		Recommendations	
1.	Silver		63
	Nitrate	48	
	Argyrol	58	
2.	Mercury		64
	Blue ointment	52	
	Calomel	50	
	Ammoniated mercury	55	
	Mercuric chlorid	39	
3.	Arsenic		61
	Fowler's solution	49	
	Sodium cacodylate	24	
	Arsphenamin	50	
4.	Iron		60
	Syrup of ferric iodid	51	
	Blaud's pills	35	
	Ferric citrate	40	
5.	Phosphorus	42	
6.	Cod liver oil	63	
7.	Iodin		50
	Potassium iodid	43	
8.	Turpentine	17	
9.	Mustard	49	
	ANTISPASMODICS		
10.	Epinephrin	53	
11.	Atropin	58	
	Belladonna	43	
12.	Magnesium sulphate	36	
13.	Calcium chlorid	49	
	STIMULANTS (HEART AND CIRCULATORY SYSTEM)		
14.	Camphor	52	
15.	Digitalis	62	
16.	Strophanthus	25	
17.	Nitrites	20	
	RESPIRATION (CENTRAL)		
18.	Strychnin (tincture of nux vomica)	40	
19.	Caffein	30	
	HYPNOTICS		
20.	Alcohol	28	
21.	Chloral hydrate	55	
22.	Barbital	17	
23.	Luminal	36	
24.	Bromids	61	
	LOCAL ANESTHETICS		
25.	Procain	47	
26.	Ethyl chlorid	30	
27.	Orthoform	13	
	LAXATIVES		
28.	Castor oil	55	
29.	Senna	26	
30.	Rhubarb	32	
31.	Jalap	12	
32.	Aloin	3	
33.	Cascara sagrada	55	
34.	White liquid petrolatum	45	
35.	Sodium sulphate	45	
	ASTRINGENTS		
36.	Tannates	25	
37.	Bismuth	51	
	Opium series		62
38.	Opium	30	
	Morphin sulphate	46	
	Paregoric	47	
39.	Codein sulphate	54	
40.	Heroin	20	
	RESPIRATORY TRACT		
41.	Ipecac	48	
42.	Ammonium carbonate	33	
43.	Squills	14	
	ANTIPYRETICS		
44.	Quinin	48	
45.	Antipyrin	49	
46.	Phenacetin	36	
47.	Pyramidon	13	
48.	Acetylsalicylic acid	52	
49.	Sodium salicylate	49	
	ANTHELMINTICS		
50.	Male fern	62	
51.	Santonin	64	
	DIURETICS		
52.	Citrates	53	
53.	Acetates	34	
54.	Theobromin sodium salicylate	25	
	ALKALIS		
55.	Sodium bicarbonate	62	
	URINARY ANTISEPTICS		
56.	Hexamethylenamin	59	
57.	Salol	30	
	MISCELLANEOUS		
58.	Menthol	36	
59.	Phenol	45	
60.	Sulphur	44	
61.	Boric acid	56	

ABSTRACT OF DISCUSSION

DR. F. PAUL GENGENBACH, Denver: When we realize what a large proportion of the acute illness of early childhood

2. Ramsey, W. R., and Groebner, O. A.: Further Progress in the Study of the Relative Efficiency of the Different Mercurial Preparations in the Treatment of Congenital Syphilis in Infants and Children as Determined by a Quantitative Analysis of the Mercury Elimination in the Urine, Am. J. Dis. Child. **20**:199 (Sept.) 1920.

3. Variot, G.: La puériculture pratique, ou, l'art d'elever les enfants du premier age, Paris, Doin, 1912.

are due to disturbances in the gastro-intestinal tract, we might say that the first thing for a sick child is not to give it any drugs or any food. Push the water drinking. Let water be the therapeutic agent. Then after you learn just what the nature of the disturbance is, start feeding, gradually increasing the amount to the point of tolerance. Nutrition is the important thing. It is very important not to upset digestion. We can use drugs in different ways. We can use what might be termed an average dose, at average intervals. That is, so much of a drug every two, three or four hours, estimating the dosage by Young's or some other rule. On the other hand, there is something to be said in favor of what might be termed homeopathic dosage. I find frequent use for fractional dosage. I use it in all children that I am seeing for the first time, because I know nothing about their idiosyncrasies or their reactions. In the second place, I use it in consultation practice, because I feel it is safer to prescribe in that way, for the practitioner is going to superintend the case after I leave. And, thirdly, I use fractional doses at frequent intervals when I am anxious to get plenty of water into the child. Another factor is palatability. It is one thing to prescribe a drug, and another to get it down. Another important phase is to give drugs so that they do not upset digestion. In a general way, since the child has a good chance of getting well without medication, it would be safer to look after the child's nutrition and not give any drugs. However, it ought to be possible to do both. In addition to food and drug therapy, the other things we always think of in pediatric practice are mechanotherapy and hydrotherapy, including steam inhalations and counter-irritation and all kinds of baths. I want to second Dr. Helmholz' suggestion that this section appoint some sort of committee or commission, consisting of pharmacologists, therapeutists and pediatricians, so that this matter may be gone into in a scientific manner, and so that we will have something definite to give to the general practitioner, who, after all, treats the majority of children.

Dr. Richard M. Smith, Boston: Children tend, on the whole, to get well. Children have very little chronic disease or very little disease which is evidenced by degeneration of one form or another. We must, in general, consider conditions which represent temporary deviation from a normal healthy condition to which the patient tends to return. Largely, I think, because of this fact, pediatricians and general practitioners dealing with children have become less and less accustomed to the use of drugs. In doing this we have suffered because we have failed frequently to avail ourselves of drugs which are of real value. Therefore, I think Dr. Helmholz' plea is particularly timely, that we shall familiarize ourselves again with the facts we already know with reference to drug therapy as applied to children, and we shall also attempt to increase our knowledge, particularly with reference to the dosage that it is necessary to give to produce satisfactory results. We frequently give up the use of certain drugs because unable to produce satisfactory results, and these results are unsatisfactory because we have used the drug inaccurately, or because we have given a dose which is insufficient to produce the desired results. We should confine ourselves, for the most part, to the use of single drugs, and should familiarize ourselves with those drugs so that we shall actually know when to employ them, and then learn the dosage of these drugs so that we may employ them intelligently.

Dr. J. I. Durand, Seattle: In regard to starvation: If there is an infection ouside the intestinal tract, we are not justified in starving the child. Keeping up the child's nutrition is a very important factor in effecting a cure. If the infection is outside the intestinal tract, and if the child is hungry and wants food, it is safe to feed the child a soft diet. That does not necessarily mean a liquid diet. Gruels and vegetables are taken care of just as well as milk. The younger the child, the more danger there is of starvation ,and infinite damage has been done to a tiny baby by the barley water feeding continued over a long period. It is never justified. Starving a baby under 6 months for more than twenty-four hours is never justified. Another practical point in the treatment of children is that too many laxatives have been used. Calomel should not be given to a child under 3 years old. It is a drastic purge, and does much damage. Phosphorus and cod liver oil are specifics in rickets. I use 1 c.c. oil of phosphorus to 100 c.c. of cod liver oil, in rapidly increasing doses up to 2 or 3 drams daily. Chloral is a very valuable drug in infancy, especially in convulsions, and can be given in relatively large doses, 2 grains by mouth, or 4 or 5 grains by rectum, in repeated doses, to a child 1 year old. Pyelitis is extremely common. You can give large doses of hexamethylenamin if you do not continue more than twenty-four hours. Two grains for a baby 6 or 8 months old or even 1 year old, every two hours for twenty-four hours, has never caused damage. Then stop and alkalize the urine with potasium citrate, because the infection is usually due to the colon bacillus, which will not grow in an alkaline solution. Keep this up five days and repeat the hexamethylenamin.

THE OCULAR MENACE OF WOOD ALCOHOL POISONING*

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PHILADELPHIA

The adoption of the national prohibition amendment in the United States, and the possible advent of similar restrictions in Great Britain make the ocular complications of wood alcohol poisoning a live topic for discussion. The more we restrict the use of ethyl alcohol, the greater is the temptation to substitute methyl alcohol, and so long as methyl alcohol remains the most deadly poison of daily commerce, so long will human eyesight, if not life itself, be menaced by ignorant, careless or criminal handling of this toxic product. As ophthalmologists we have a double duty to perform: (1) to make an intensive study of the toxic effects of methyl alcohol on the delicate ocular tissues, and (2) to establish a propaganda in "preventive medicine" that will protect possible victims, whether guilty or innocent.

Three fateful factors have increased the dangers of wood alcohol: (1) its refinement from a nauseous, vile smelling compound, to one as clear and palatable as ethyl alcohol, (2) its fatal cheapness, which has naturally resulted from the increased output and the improved methods of manufacture, and (3) its unusual solvent power which has so greatly encouraged its use in the arts.

In America we have (1) ethyl alcohol, which is either absolute (99 per cent.) or rectified (90 per cent.); (2) methyl alcohol, which may be either the commercially impure liquid or the purified product, and (3) denatured alcohol, which was formerly composed of 10 parts of methyl alcohol and one half part of pyridin bases, added to 100 parts of ethyl alcohol, but since December, 1919, this formula has been modified by a reduction of the methyl alcohol from 10 to 2 per cent. There is a well founded suspicion that in order to evade the prohibition act unscrupulous chemists are submitting this denatured alcohol to fractional distillation so as to remove the benzin and wood alcohol and thus secure an impure ethyl alcohol which can be sold for drinking purposes.

In the United Kingdom, this product is better regulated, and, therefore, the cases of blindness have been fewer, although it is quite possible that many cases have escaped detection and reporting. According to the "Extra Pharmacopeia" of Martindale and West-

* Read at the Oxford Ophthalmological Congress, Oxford, England, July 15, 1920.

cott for 1920, you have: (1) ethyl alcohol of 99 per cent. and 90 per cent. strength; (2) methyl alcohol, pure, which can only be retailed at increased cost, subject to excise duty, and the impure, or commercial, variety which is from 60 to 90 per cent. pure and is sold as "wood naphtha," its use being forbidden in medicines and beverages but permitted in liniments, especially those containing aconite, belladonna, camphor, and the various soap liniments; (3) methylated spirits consisting of (*a*) mineralized alcohol, which is a denatured product containing wood naphtha 10 per cent., mineral naphtha ⅝ per cent., methyl violet sufficient to color, in each 100 parts of ethyl alcohol, used chiefly as a burning fluid, and (*b*) industrial alcohol containing 5 per cent. wood naphtha, used mostly in varnishes. The "color indicator" is a better warning to the eye than a poison label, but both should be used to designate pure methyl alcohol and wood naphtha instead of the less dangerous mineralized alcohol. The use of wood alcohol in liniments and burning fluids should be legally prohibited.

In New York, the late Dr. Gruening, in 1910, showed that wood alcohol was a fairly constant ingredient of the cheaper wines, brandies and whiskies sold in the low resorts of the East Side, in proportions ranging from 24 to 43 per cent. These large percentages proved most disastrous to the victims who drank these liquors. He urged frequent analyses and regulation under the restrictions of the national Food and Drug Act of 1906.

In Pennsylvania, Dr. Edward Martin, commissioner of health, under the state act of July, 1919, requires all manufacturers of drugs and toilet preparations to file an affidavit that the alcoholic content is pure grain alcohol, and that no wood alcohol has been used in the preparation. This has proved to be a great step forward in effective restriction; but at first, there was difficulty in controlling the jobbers in barbers' supplies and the small retailers of toilet articles. The prompt closing of several stores and the confiscation of their adulterated goods soon convinced the dealers that this law would be rigidly enforced.

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COMMERCIAL SOURCES OF SUPPLY

The city chemist of Philadelphia found methyl impurities in compound spirit of myrcia (bay rum), lilac and violet waters, quinin and other hair tonics. Chemical analyses have also revealed its presence in commercial products sold directly to the public under such names as witch hazel, balsam of myrrh, camphorated tincture of opium (paregoric), Jamaica ginger, vanilla extract, lemon extract, and the spirit of anise, peppermint, cinnamon, and tincture of capsicum and myrrh—better known as "hot drops." Well known perfumes, foreign wines, and "patent medicines" have also been found to be adulterated with it. In its pure state it is sold under such commercial names as Columbian Spirits, Eagle Spirits, Lion d'Or, Colonial Spirits, Hastings Spirits or Acetone Alcohol.

It has been used to fortify and preserve ginger ale, ginger beer, and bottled cider. I have seen one patient blinded by drinking a single bottle of fortified cider, purchased at a country grocery store. Fourteen cases of blindness from drinking Jamaica ginger were recorded in Baltimore a few years ago. During prosecution for damages, an official of the factory took a large draft to show its harmlessness, but secretly followed this with an emetic. Many Indians from our reservations while on a spree have been blinded by drinking "lemon extract" that was similarly adulterated. The case of sudden blindness with vomiting after drinking a single bottle of "Wincarnis Quinine Tonic" points more to methyl alcohol than to quinin toxemia, since the whole bottle contains only 12 grains of quinin, but this is dissolved in imported Spanish wine that could easily be adulterated at its source. The victim of this debauch might, however, have indulged in some other potation with methyl alcohol content.

It is the basis of all so-called "burning fluids" which are freely used in the chafing dish, to heat the vapor bath cabinet and to boil water. In rooms with poor ventilation the fumes are always dangerous.

Bathing the hands, face and head with these solutions has also been followed by toxic effects.

The "antifreeze" mixtures which have been sold so freely for use in the engines of motor vehicles are almost wholly composed of wood alcohol. These mixtures have often been stolen by garage employees and recklessly sold to unwary victims. It is easy to understand, therefore, what a terrific toll of sudden blindness and death followed the wood alcohol orgy in the United States during the first year of prohibition.

Many liniments and veterinary preparations have a large methyl alcohol content and may, therefore, prove dangerous. No legal restrictions have as yet been placed on them.

The largest manufacturer of wood alcohol in America has recently designated his product "Methanol," which will at least remove the temptation of alcoholic suggestion to the confirmed drinker. When the morale of the caretaker of an anatomic museum falls to low that he will drink the alcohol off the specimens under his charge, we can understand why the significance of the word "wood" in front of the word alcohol will not impress the toper's vision until after he has taken a lethal dose and blindness has ensued.

We cannot prevent the "confirmed alcoholic" who is ignorant, secretive or reckless from becoming an easy prey to its poisonous effects; but we can legally prevent the ignorant or unscrupulous manufacturer from substituting methyl for grain alcohol in his pharmaceutic products, flavoring extracts and toilet preparations. Furthermore, we can, by pitiless publicity, teach the public the dangers they face in drinking or otherwise using compounds containing this poison.

No restrictions have been placed on the use of wood alcohol in the arts, and no warning has been given as to its dangers. The official reports of Great Britain show that during the year 1914 more than 1,100,000 gallons were used in varnishes. We may reasonably infer that some ocular injury followed the use of such an enormous output.

As to its relative cost, the wholesaler in America buys it by the barrel at about one-eighth the price of grain alcohol. Denatured alcohol is equally cheap; but it does not cut varnish so well, and the disagreeable odor and taste prevent its use in toilet preparations and pharmaceuticals. In Great Britain, most fortunately for you, the relative wholesale prices are reversed because wood alcohol is scarce and consequently dear; hence, pure methyl alcohol costs as much as, or even more than, ethyl alcohol. The temptation to substitute it for ethyl alcohol is, therefore, greatly lessened.

You have, moreover, the distinct advantage of better and more systematic inspection and regulation which prevents the pollution of your products by careless or criminal profiteers. The one great danger to you is the possible importation from other countries of wines, whiskies, toilet articles and "patent medicines" that have been adulterated with wood alcohol at their place of manufacture.

The mere existence of commercial compounds containing wood alcohol constitutes a menace to the eyes and lives of the community; and their manufacture and sale should be strictly prohibited or regulated by law, and violations punished by fine and imprisonment. If their use is permitted, the contents should be colored with methyl violet and a poison label affixed to each container stating that the use of this preparation by "drinking, breathing or rubbing on skin may cause blindness or death." Instructions should also be issued to the trades affected, calling attention to the dangers of using wood alcohol to varnish tanks, closets or rooms where the air is confined, requiring proper ventilation and ordering employees to seek the air at stated intervals of two hours. These public duties would naturally fall to the existing department of health; but it is our plain duty to see that all information as to its manifest danger to vision is properly disseminated to the public. A special revenue tax should be imposed and a record of "poison sales" required for both wholesalers and retailers. The tax on denatured alcohol should be reduced or equalized so that it can be sold cheaper than methyl alcohol, thus removing the temptation to substitute because of cheapness. In addition to this, the law should require that every case of wood alcohol poisoning should be reported and the source of supply revealed. I believe, however, as previously stated, that the only safe plan is to limit the manufacture of wood alcohol and to regulate its sale, legally, since it constitutes the most deadly poison used in daily commerce. Manufacturers who use this product in their business should be the first to seek a substitute and join us in this crusade to abolish its use, since they would be subjected to compensation damages if their employees were injured by its use.

TESTS FOR WOOD ALCOHOL

Mulliken and Scudder's Test.—In order quickly to determine the presence or absence of wood alcohol, the test of Mulliken and Scudder has often been employed, but has not always proved sufficiently dependable. Nevertheless, it is a test that a traveling liquor inspector can quickly utilize. It depends on rapid oxidation by plunging a red hot copper spiral wire into the suspected liquid, or into a distillate made from the same. Formaldehyd is thus formed, and its pungent odor can be recognized by the stinging sensation it produces in the upper part of the nose. This test is useful only when the methyl alcohol strength is more than 10 per cent.

Robinson's Test.—A more practical method, which can be easily applied, has recently been devised by the chemist to the Department of Public Health of Philadelphia, Dr. William C. Robinson. He converts the wood alcohol by oxidation through potassium permanganate into formaldehyd, then adds it to acidulated milk, and gently heats the mixture until a pink color develops. This test is so delicate that 0.01 per cent. of methyl alcohol will be revealed:

Quantitative Test.—This may be performed thus:

1. Take 100 c.c. of the suspected methyl alcohol liquid and add sodium carbonate until it becomes alkaline.
2. Dilute this with an equal volume of water.
3. Then distil the solution.
4. Cool 100 c.c. of the distillate to 60 F., and take the specific gravity.
5. Compare the specific gravity with tables to estimate the percentage of alcohol by weight and volume.
6. Pour the distillate into a Zeiss immersion refractometer and compare the scale reading and reference table to ascertain whether pure ethyl alcohol, pure methyl alcohol or a mixture is present.
7. If both are present, obtain percentages of each by applying an empiric formula.[1]

Qualitative Test.—This may be performed thus:

8. Redistil the remaining 100 c.c. of distillate (No. 4 above).
9. Take the first 10 c.c. coming over and add 3 c.c. of 1 per cent. solution of potassium permanganate.
10. Gently heat to 110 F. and constantly agitate the vessel until the odor of ethyl aldehyd is perceptible.
11. If the solution decolorizes, add more permanganate solution, 1 c.c. at a time, until pink color is restored.
12. Add a few drops of commercial hydrochloric acid to precipitate the excess of permanganate (as brown manganese hydroxid) and filter.
13. Pour the colorless filtrate into a porcelain casserole and add 10 c.c. each of water, fresh milk and hydrochloric acid.
14. Heat the mixture to the boiling point with constant agitation until a bright permanent pink develops, which will occur if only 0.01 per cent. of wood alcohol is present in the suspected liquid.

For an emergency inspection, we can modify the quantitative test outlined above by omitting the distillation. The suspected methyl alcohol liquid is thus poured directly into the hygrometer and Zeiss refractometer, and the readings of specific gravity and percentages are compared with the reference table and empiric formula (as in Nos. 5, 6 and 7). This will roughly show the relative amounts of ethyl and methyl alcohol present.

PORT OF ENTRY THROUGH THE MOUTH, NOSE AND SKIN

We should always bear in mind that wood alcohol may develop its lethal action through three different avenues of entrance into the system: (1) by ingestion, (2) by inhalation, and (3) by cutaneous absorption

1. Ingestion is usually the most common method of poisoning. If taken pure, a single teaspoonful has been known to cause blindness, and an ounce to cause death. As different individuals seem to be variously affected, there may be an idiosyncrasy present that increases immunity. Thus, if three persons indulge in a wood alcohol spree, newspaper reports will usually state that "two died and one went blind." Increase of tolerance is also acquired by long exposure to the poison, as in the case of painters.

The acute toxic symptoms that usually follow ingestion are headache, dizziness, nausea, vomiting, abdominal pain, chilliness, leaky skin, cardiac weakness, slow pulse, sighing respiration, marked physical prostration, weakness of the extremities, delirium, convulsions, stupor, and finally death. Blindness is usually noticed by the patient on the second day, when the stupor begins to wear off. Many observers have noted that early and persistent vomiting has been followed

1. Compare Leach: Food Inspection and Analysis, Ed. 4, p. 782.

by clearing vision. In like manner prompt relief of the toxemia may avert blindness. On the other hand, blindness may ensue when acute systemic symptoms have been wholly absent. The symptoms from a single large dose, and those from repeated small doses, may show considerable variation.

2. Inhalation of the fumes of wood alcohol may be followed by blindness. This method of poisoning is more chronic and insidious, and has often been denied; but recorded histories verify the fact.

Loewy and von der Heide, by animal experimentation, determined that 0.2 per cent. of wood alcohol in the inspired air will cause body saturation if continued long enough. They observed further that the fat absorbed less of the poisonous fumes than the lean.

Buller and Wood have recorded eleven cases of poisoning by inhalation, Gruening two, Tyson three, and de Schweinitz one. I have seen two cases of poisoning by inhalation. One patient (Case 3) inhaled the fumes for only one hour a day in a china cement factory. The second patient (Case 6) inhaled the fumes for three days while varnishing the small engine room of a submarine.

The majority of these cases occur from occupational exposure to the fumes. The painter uses it as a cleansing fluid or as a cheap diluent to cut his shellac in order to varnish the interior of large beer vats, closets or closed rooms. Two of Tyson's patients shellacked lead pencils in a fairly large room, but finally succumbed to the slow poisoning. The hatter mixes it with shellac to stiffen the nap or straw blanks. The dyer of feathers uses it to dilute the colors; the maker of shoe polish adds it to the paste; the brass finisher uses it in the lacquer, and the maker of rubber tires mixes the mass with it. If ventilation is very free, the danger will be lessened; but open air exercise at frequent intervals should be required for every such employee. Sooner or later, some ocular injury becomes manifest in spite of every precaution.

3. Cutaneous absorption has also been denied; but there are many cases of recorded blindness. These have arisen chiefly from the daily application of compound spirit of myrcia (bay rum), toilet waters and liniments. Some were caused by the washing of the face, head and hands in pure methyl alcohol. Even Turkish bath rubbers are not exempt from toxic absorption, although they apply it only occasionally. Buller and Wood have recorded several cases, and E. V. L. Brown, in discussing Fridenberg's [2] paper on "Wood Alcohol Amaurosis," relates a typical case of a painter who spilled a gallon of wood alcohol down his leg, soaking his clothes, and filling his shoe. He carelessly allowed this to dry on his skin. Toxemia and blindness resulted in a few days.

SYMPTOMATOLOGY

The ocular symptoms are not pathognomonic, but vary within certain limitations. As a rule, vision is seriously impaired. Blindness may be early, sudden and complete. At the end of a month, there may be marked recovery, which either remains permanent or is followed by gradual failure of vision and ultimate blindness. This history of variable vision associated with gastro-intestinal symptoms is typical enough to make us suspect wood alcohol as the causative factor. When there is chronic poisoning, the visual loss is more insidious, and the diagnosis is more difficult.

The objective symptoms are a sluggish, well dilated pupil, which may or may not react to light or convergence, scleral congestion, deep pain on rotation of the globe, tenderness on finger pressure and occasionally paresis of one or more of the extra-ocular muscles accompanied by diplopia. Sometimes, the levator of the lid is involved and ptosis results.

The optic nerve-head shows many variations but no characteristic appearance. The conditions most frequently recorded are: (*a*) papillitis, (*b*) retrobulbar neuritis and (*c*) sudden sclerosis.

(*a*) *Papillitis.*—The swelling of the papilla may reach 2.0 diopters. The edema may spread over the margins on to the retina. The edges may be dusky red, with dark, dilated veins and shrunken arteries. This papillitis generally subsides in from one to two weeks. It somewhat resembles influenzal papillitis; but the latter yields more readily to hot packs or other diaphoresis and the vision recovers more quickly and completely. Associated symptoms of intracranial pressure must, of course, be eliminated in making a diagnosis.

(*b*) *Retrobulbar Neuritis.*—These cases are more insidious. They are often followed by a decided shrinkage of the nerve-head, sometimes in the form of a sector-like excavation, limited to a quarter or half of the disk, glistening white in appearance, or with bluish tint, revealing the lamina cribrosa in the excavation, but usually free from connective tissue deposit. Fridenberg believes this appearance to be characteristic of this lesion; de Schweinitz and E. V. L. Brown confirm this observation of sector atrophy of the papillomacular bundle, but with certain modifications.

(*c*) *Sudden Sclerosis.*—This may occur immediately after ingestion, and reveals chalky white pallor of the papilla, without the slightest appearance of shrinkage. I have seen several cases of this kind and they are equally typical.

Whether the ganglion cells of the retina or the fibers of the optic nerve are first attacked has never been decided. Birch-Hirschfeld, Holden and de Schweinitz indorse the former view. Most of the conclusions reached have depended on animal experimentation, but postmortem degeneration of these delicate structures is so rapid that a satisfactory study is difficult to make. As I have elsewhere stated, it is most unfortunate that so much excellent human material has recently gone to waste without a single microscopic report being made. According to Fridenberg, both of these highly energized tissues are seriously injured by contact with the formic acid, which, like its congener, the bee sting, creates strangulation by the sudden tissue swelling or edema which follows exposure to such a corrosive poison. The corrosion does harm and so does the swelling. Whichever tissue is touched first will be injured first. As the serous infiltration subsides and strangulation is removed, the vision improves; but if the nerve fibers are corroded and later undergo shrinkage, vision is finally lost. The injury is modified, therefore, by the degree of concentration of the circulating poison which seems to have a selective affinity for these delicate tissues.

A critical study of the phenomena occurring in cases of wood alcohol poisoning and more especially the characteristic symptoms noted in Case 6, herein reported,

2. Fridenberg, P.: Tr. Am. Ophth. Soc. **12**: 513, 1910.

have led me to the conclusion that the primary and fundamental lesion in all cases of methyl alcohol poisoning is a profound injury of the pituitary body. The acute toxic symptoms are typical of such a lesion, while the chronic symptoms are equally significant. A similar lesion of the pituitary may possibly be found in quinin and other toxemias. The tentative diagnosis of epidemic encephalitis in my case is also suggestive, since the symptoms of that disease indicate a pituitary lesion. The changing but steadily contracting fields, the fugitive scotomas, the visual loss and recovery, the sclerosed or atrophic nerve-heads, the fixed and dilated pupils, the temporary paresis of the extra-ocular muscles, the ptosis, the ataxic gait and the mental hebetude are all characteristic of pituitary involvement.

The fields of vision usually reveal a concentric contraction for both form and color. Central scotomas are often present but not always permanent, as many recoveries have been recorded. Tyson noted in his chronic cases multiple scotomas scattered over the fields. Occasionally, both the fields and the central vision are preserved in spite of the apparent sclerosis of the nerve-head.

REPORT OF CASES

Case 1.—A housewife, aged 49, seen by me ten years ago and whose case was reported before the Pennsylvania State Medical Society in 1910, indulged in a single alcoholic drink on Christmas eve, 1909. Jamaica ginger was suspected. This was followed by sudden and complete blindness the next day. The sclerotics were yellow. She had a spasmodic "stomach" cough for several days. She was blind in both eyes; the pupils were wide and fixed; there was a feeble light reflex in the right eye. The nerve-heads were sclerosed and dull white, but there was no shrinkage. The vessels were attenuated.

Thyroid extract was given and negative galvanism was advised. Acidosis was not tested. Electrical treatment was begun, Jan. 19, 1910. One month later, the right disk became vascularized and the left slightly hyperemic. At the end of the second month, she regained light perception and gradually continued to improve until, Oct. 1, 1910, vision was: right eye, 20/50 J-10; left eye, 20/100 J-14. The fields began with a very small central area and broadened out proportionately. This vision was maintained for several years; but recent reports are not so favorable. If the acidosis had been treated in the early stages and she had persisted with the galvanic treatment, I believe this vision could have been maintained.

Case 2.—A man, aged 46, seen by me at about the same period, suffered sudden blindness following the drinking of a bottle of fortified cider, bought at a country grocery store. When first examined, the acute symptoms had subsided and vision had returned to about 2/200 in each eye. The nerve-heads were pale, the edges distinct, and there was slight central cupping. The fields were concentrically contracted. A trial of galvanism was made but without improvement in vision.

Case 3.—A man, aged 40, whose case was previously referred to as resulting from inhalation, was under treatment for several months, with failing vision, slight pallor of disk and contraction of fields without apparent cause. I finally directed him to keep a diary of his daily activities, hoping to discover something definite. One day I noticed the record of a visit to a china cement factory for one hour. He said he went there regularly every day, but he had forgotten to record it previously. On examination of the cement formula, wood alcohol was found to be a constituent. By cessation of his visits to the factory and the application of negative galvanism, he slowly recovered normal vision and fields, which he still retains.

Case 4.—A marine was seen in June, 1919, by Dr. Connole, of Wilkes-Barre, Pa. (to whom I am indebted for the notes), and by Dr. Daland in consultation. After a debauch on compound spirit of myrcia "two sailors died and one went blind." Thirty-six hours after ingestion, vision was reduced to light perception and was wholly lost two days later. There was typical papillitis, 1.5 diopters, increasing to 2.0 diopters, and gradually receding.

The patient was immediately placed on alkaline treatment: (1) lime water in milk; (2) enteroclysis of 5 per cent. dextrose containing sodium bicarbonate, 2 drams to the pint; (3) sodium bicarbonate by the mouth, 10 grains every three hours, and (4) strychnin sulphate, 1/5 grain in twenty-four hours, later 1/5 grain.

Light perception was regained in two weeks and vision improved to practically normal after two months, at which time the margins of the disk were distinct but reddish on the nasal side; the vessels were contracted, with central cup showing lamina. Color perception was normal. There was concentric contraction of the fields; left, 10 degrees, right 20 degrees. The blind spot was slightly enlarged. The patient was seen in France one year later by Dr. Dunbar, and asserted that his vision was excellent. The present condition is not known.

Case 5 (Recently reported by Dr. Mongel before the College of Physicians of Philadelphia).—A man, aged 21, had three drinks in a saloon on Christmas eve, 1919, and three the next day. He remembered that the liquor had a rusty, foul, etherlike odor and taste. In forty-eight hours, vision was reduced to light perception. The pupils were slightly dilated and responded feebly to light. The conjunctivae were deeply injected. The anterior scleral vessels were distended. The media was clear. There was severe neuroretinitis. The papillae were swollen and hyperemic; the margins blurred, with edema extending into the retinal tissue. The retinal vessels were dark, engorged and tortuous. The urine was highly acid; the specific gravity was 1.012.

Treatment consisted of (1) gastric lavage; (2) salines through enteroclysis; (3) pilocarpin; (4) hot packs; (5) strychnin sulphate, 1/30 grain, three times a day, and (6) calcium chlorid, 10 grains four times a day.

Light perception was regained in two weeks, reached 20/50 in one month, and became normal at the end of two months. The fields showed slight concentric contraction with central scotomas. The nerve, retina and blood vessels gradually cleared up. Calcium chlorid and strychnin were continued for three months.

Case 6.—A painter, aged 20, inhaled fumes while varnishing the engine room of a submarine for three days, in March, 1920. He was dizzy the first day, hilarious the second and nervous the third. He suffered gastric pain and insomnia. Diplopia developed from paresis of the external rectus. Ptosis and blindness soon followed. In three weeks, he began to improve. A diagnosis of epidemic encephalitis was made by the attending physician. Vision at the first test was: right eye, 20/70 J-14; left eye, 5/200 J-20. The pupils were unequally dilated, the left being wider; they reacted to light and accommodation. The nerve-head of the right eye was pale, there was central excavation, venous pulse and fine vascularization of the disk. In the left eye, the nerve pallor was more marked; there was less vascularization; excavation was more extensive; there was venous pulse; the veins were overfull. There were slight nystagmatic movements; exaggerated patellar reflexes; no static ataxia; a curious gait. Lack of coordination suggested pituitary injury. The fields were limited for form and color; there were no central scotomas. There was marked mental hebetude.

Acidosis of the early stages had changed to alkalosis, 113 per cent. This was gradually reduced by treatment to 65 per cent., which is practically a normal balance. There was some backache, but the urine was normal. Engorged nasal tissues interfered with breathing.

With negative galvanism and refraction, central vision has improved to: right eye, 20/15 pt.; left eye, 20/20. Accommodation was paralyzed. Add S + 2.D = O.D. J-2, O.S. J-3. The fields have widened out. There is less pallor of the disk; vascularization has increased. There is less mental hebetude and greater physical agility following the use of pituitary extract.

THE BIOCHEMISTRY OF METHYL ALCOHOL

The biochemistry of methyl alcohol as it passes through the system is somewhat complex. It is essen-

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tially a protoplasmic poison. The bulk of this poison is eliminated through the lungs, skin and kidneys, while the alimentary tract gets rid of a large portion. The remainder undergoes oxidation into formaldehyd and formic acid, both of which are corrosive poisons. The latter, however, will not oxidize further, but is slowly eliminated by the kidneys. Pohl, in 1893, showed that after ingestion of wood alcohol the excretion of formic acid was increased in the urine. In wood alcohol workers, this increase is so marked that Fehling's solution is promptly reduced. This chemical fact should always be borne in mind, or sugar will be suspected and a false diagnosis of diabetes made by the inexperienced.

Acidosis seems to be a constant condition in the early stages. Tyson has demonstrated acidity of the aqueous humor in some of his cases. Judging from my experience in Case 6, alkalosis may appear in the later stages. These chemical reactions will be revealed by Van Slyke's test for carbon dioxid in the blood. If the attack of acidosis is acute and of a severe type, it may manifest itself by Kussmaul respiration.

TREATMENT

Acidosis should be overcome by the early administration of alkalis. Harrop reports good results obtained in a case of acute acidosis of great severity treated by him at Johns Hopkins Hospital, in which he made intravenous injections of from 400 to 500 c.c. of a 5 per cent. solution of sodium bicarbonate on succeeding days. He governed his indications by Van Slyke's test. We should always bear in mind, however, that excessive alkalosis may cause grave irritation of the kidney, and that as soon as tests show that the plasma bicarbonate has returned to normal, no more alkali should be given. We already know that the edematous swelling caused by a bee sting can be reduced by alkalis. It will, therefore, be a great advance in the treatment of methyl alcohol poisoning if we can relieve this acute acidosis by the early use of alkalis and thus lessen the destruction of nervous tissue.

Connole's case shows the value of comparatively small doses of sodium bicarbonate, given by the mouth and by enteroclysis. The vision promptly improved and was maintained for at least a year. Mongel secured equally good results with calcium chlorid, which he considers both alkaline and hygroscopic; but not sufficient time has elapsed for us to pass final judgment in his case. It will be interesting to watch whether these results are permanent.

According to Bongers, much of the wood alcohol in the system is returned to the stomach and can be removed by gastric lavage. He recovered, in this way, three times as much on the second and third days as on the first day. He also found that formic acid appeared in the washings as long as twenty-seven hours after the ingestion.

Many observers have noted that those who vomit early and freely are not so seriously injured by the poison and recover with less impairment of vision. It will be necessary to decide, therefore, whether emesis through mustard or apomorphin hydrochlorid is indicated or whether daily lavage will prove of greater utility. The stomach pump should be used early if the patient is seen early and methyl alcohol poisoning is suspected; but most victims are so secretive in the beginning that this is seldom possible.

Diaphoresis through hot packs, vapor baths or pilocarpin has frequently been employed with great success. Hot drinks also encourage this effect. Apomorphin hydrochlorid and pilocarpin are both excellent lymphagogues in small doses. Jalap and saline purgatives have accomplished much good; but an alkaline enteroclysis may prove more useful because the absorbed water helps to dilute the poison and wash it out of the system, while the added alkali will help to neutralize the toxicity.

Oxygen has been used in methyl alcohol toxemia to relieve cyanosis and support the heart, and yet it is an undetermined question whether this oxidation would not increase the virulence of the poison by converting the formaldehyd into formic acid. Harnack in a study of this question concluded that "methyl alcohol by slow oxidation is converted into formic acid, while in rapid oxidation carbon dioxid and water were formed." Rapid oxidation may, therefore, be a valuable suggestion in the chemistry of metabolism. In a former paper on wood alcohol, I recommended the use of potassium permanganate in order rapidly to oxidize the abnormal chemical compounds in the stomach, just as is done in opium poisoning; but I would prefer to have this suggestion tested out by animal experimentation before putting it into practice among human beings.

It has been suggested that since deafness often ensues, and there is uncertainty of gait, together with certain head movements, the middle ear is involved. I would rather believe that the pituitary body had suffered injury, since many of these symptoms point to such an origin. Case 6 is very suggestive of this. In that event, the use of pituitary extract should prove of service, as it did in this case. Thyroid extract, however, was more useful in Case 1.

If marked nervous symptoms develop, the use of scopolamin hydrobromid may be indicated; but it should be used with caution as it will interfere with elimination unless pilocarpin is used to overcome this tendency. While potassium iodid has been freely used to eliminate the toxins during the more chronic stages, I would prefer to use solution of arsenous and mercuric iodid (Donovan's solution) for this purpose. The tonic effect of large doses of strychnin must always be considered, but I have not observed success from the use of this drug.

To revascularize the disk and restore the lost function of the nerve, no measure can equal the stimulating effects of negative galvanism. The patient with partial blindness resulting from inhalation, to whom I have previously referred (Case 3), recovered practically normal fields and vision after prolonged treatment with negative galvanism. The patient with sudden sclerosis (Case 1), who was totally blind for two months, recovered half vision and fields under the use of negative galvanism for one year. Another patient (Case 6) also regained normal central vision from galvanic stimulation, although the accommodation is still paralyzed.

Negative galvanism should be administered with great care, using a high voltage and low amperage. Sixty volts should be passed through the main shunt controller with the amperage reduced to 1 milliampere by a secondary carbon controller. The current is passed for ten minutes, and then reduced to one-half milliampere and passed for a second period of ten

minutes. These séances are continued on alternate days, as a rule. I believe that electricity is the most efficient therapeutic measure we have for the milder cases of toxic injury in which there has not been complete destruction of the nerve fibers. If this has already occurred, as in my case of poisoning from bottled cider (Case 2), galvanism will have no effect whatsoever.

CONCLUSIONS

1. Wood alcohol is the most deadly poison used in daily commerce.

2. One teaspoonful has been known to cause blindness and 1 ounce to cause death.

3. The port of entry may be through the mouth, nose or skin.

4. Wood alcohol should be identified by Robinson's test.

5. It is a protoplasmic poison possessing a selective affinity for the delicate nerve tissues of the eye.

6. Its biochemistry is modified by oxidation, first to formaldehyd and then to formic acid, both of which are corrosive poisons.

7. Formic acid is the end-product excreted by the kidneys.

8. If formic acid is present in the urine, it will promptly reduce Fehling's solution, thus suggesting to the inexperienced a false diagnosis of diabetes.

9. Van Slyke's test will reveal acidosis in the early stages and alkalosis later.

10. Sudden blindness with vomiting and abdominal pain should always arouse suspicion of methyl alcohol poisoning; especially if diplopia or ptosis is associated.

11. Papillitis, sector-like atrophy and sudden sclerosis of the nerve-head are equally typical fundus lesions.

12. Symptoms of pituitary injury are most suggestive in pointing to this as the primary and fundamental lesion.

13. Contracted fields and central or paracentral scotomas are usually present.

14. Treatment should include early neutralization by alkalis, and elimination by lavage, emetics, diaphoretics and rapid oxidation, together with stimulation of the optic nerve by negative galvanism applied directly to the eye. Thyroid extract and pituitary extract may be indicated.

15. The manufacture and sale of wood alcohol should be prohibited or regulated by law.

16. If sales are permitted, safeguards and warnings should be required and the public instructed as to the great danger to vision and life.

17. A special revenue tax with registered "poison sales" would regulate and record its distribution and in cases of poisoning reveal the source.

18. This tax should equalize the cost of denatured alcohol and methyl alcohol and thus remove the temptation to adulteration because of cheapness.

19. All wines, whiskies, toilet articles and "patent medicines" imported from foreign countries should be tested for wood alcohol before passing through the customs inspection.

20. The name "methanol" specifically designates this product and yet avoids the tempting suggestiveness of the word "alcohol."

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THE COUNTING OF BLOOD CELLS AND BACTERIA

A PRECISE AND SIMPLE METHOD WITHOUT A SPECIAL CHAMBER *

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Methods of counting red cells and bacteria may be classified as direct and indirect: direct, when the cells per unit volume of a suspension are enumerated in a counting chamber; indirect, when a suspension of one variety of cells is mixed with and counted against a suspension of another kind which has already been enumerated in some way or other. The first method of the indirect type to be described was that of Wright [1] for the counting of bacteria, which is too well known to need description. It enables workers to make approximate counts with ease and rapidity; but, being based on the assumption that the number of red cells in a cubic centimeter of a normal person's blood is constant, whereas it is in fact both individually and diurnally variable, the method has never aspired to be one of precision. Again, the difficulty of obtaining an even distribution of red cells and bacteria in the spread films is by no means inconsiderable. Moreover, the method entails the use of a suspension of human erythrocytes as the standard of comparison, and it is therefore impossible to enumerate other suspensions of human red cells by its means.

DETAILS OF EXPERIMENT

Test-Tube	Final Dilution of Same Original Sample of Human Red Cells	No. of Human Red Cells per C.mm. (Average count of two drops)	
		Differential Method	Bürker Counting Chamber
A	1: 220	5,509,000	5,456,000
B	1: 160	5,366,000	5,326,500
C	1: 240	5,419,000	5,270,500
D	1: 200	5,238,750	5,387,000
E	1: 180	5,401,000	5,546,000
	Average	5,386, 750	5,397,200

None of these difficulties, however, are insurmountable. By substituting hen's erythrocytes, with their distinctive appearance, for human red cells as the standard suspension; by preparing them in such a way that they form a stable, unchanging standard suspension; by enumerating the standard suspension with great precision in an accurate counting chamber; by mixing standard suspension in measured proportion with the suspension to be enumerated, and counting them in the wet state, a very accurate method for the enumeration of human red cells and bacteria is achieved without sacrificing any of the rapidity of Wright's technic.

Before proceeding to describe the details of the procedure, I will give the figures of some comparative blood counts made (*a*) with first-class Bürker chamber (Zeiss) and (*b*) by the new method.

A single suspension of human red cells was made by diluting a sample of blood to 1/100. Five c.c. of

* From the Department of Pathology, University of Oxford.

1. Wright, A. E.: Technique of the Teat and Capillary Glass Tube, London, Constable & Co., 1912.

this was measured into each of five tubes, with precautions to insure a uniform suspension of the cells during the measurements. To each of the tubes there was then added a different quantity of mercuric chlorid-saline solution (described below), and the following dilutions resulted: Tube A, 1:220; B, 1:160; C, 1:240; D, 1:200; E, 1:180.

I kept myself in ignorance of these figures until all the counts were completed. Of each tube a minimum of two counts by each method was made; the figures given in the accompanying table were obtained.

Analysis of the table shows that the average total numbers of red cells arrived at by the two methods (5,386,750 and 5,397,200) differ only by 0.19 per cent. The percentage deviations from these averages for each dilution are 1.25 in the case of the differential method, and 1.46 for the counting chamber, despite the fact that a greater number of cells were counted each time by the latter method. For by the differential method an average of 550 human and 360 hen cells were counted in each of two counts, whereas in the Bürker chamber the cells counted in each of the two drops averaged 1,030.

The individual counts by the differential method showed a 2.29 per cent. deviation from the mean, and the corresponding figure for the Bürker chamber came out at 2.46.

Whatever differences, therefore, were found between the two procedures spoke in favor of the differential method.

DETAILS OF THE PROCEDURE

The following description of the details of the procedure is taken from the original article.[2]

PREPARATION OF THE STANDARD SUSPENSION

A solution containing approximately 1.3 per cent. of mercuric chlorid in sterile physiologic (0.85 per cent.) sodium chlorid solution is prepared. The fowl, which should be young and in good health, is bled directly into this solution, approximately 1 c.c. of blood being allowed to each hundred cubic centimeters of the solution. The recipient fluid is agitated gently while the blood is being added, so as to insure a thorough mixture. It is left for one hour, being shaken from time to time to prevent sedimentation of the blood. At the end of the hour it is centrifugalized, just enough to deposit the red cells, the supernatant fluid is poured off, and the original volume made up with a solution of 4 per cent. mercuric chlorid in physiologic sodium chlorid solution. The mixture is allowed to stand for six hours, the flask or bottle being shaken occasionally. At the end of this time the flask is agitated to emulsify the cells, and then centrifugalized. The cells are washed twice with physiologic sodium chlorid solution, being emulsified each time before centrifugalizing. The supernatant fluid is poured off, the original volume made up with physiologic sodium chlorid solution to which has been added a minute amount of mercuric chlorid, i. e., just enough to prevent bacterial infection.

The suspension is now ready for standardization. As the result of a large number of experiments, I have arrived at the conclusion that a convenient suspension to work with is one which contains about 20,000 cells per cubic millimeter. Therefore, the suspension should be brought to this standard in the usual manner, physiologic sodium chlorid solution being employed as the diluting fluid, and at least 1,000 cells in each of ten successive drops, or about 10,000 cells in all, being counted.

Standard suspensions thus made have been kept for eight months at ordinary temperature without showing any change in the number or appearance of the corpuscles.

2. Dreyer, Georges: A Simple Procedure for the Accurate Enumeration of Blood Cells and Bacteria Without the Use of a Counting Chamber, Lancet 1: 219 (Jan. 29) 1921.

DETERMINATION OF THE NUMBER OF RED CELLS IN A GIVEN BLOOD BY MEANS OF THE STANDARD SUSPENSION

The blood, taken in the usual manner, is diluted 1:200, with a solution of 1.3 per cent. mercuric chlorid in physiologic sodium chlorid solution. For example, one adds 0.1 c.c. of the blood to 19.9 c.c. of the mercury saline solution, previously measured into a test tube, carefully washing out the blood pipet and thoroughly mixing the resulting dilution. The tube containing the blood dilution is shaken to secure an even distribution of the cells in the suspension, and immediately 1 volume—e. g., 0.1 c.c.—of the fluid is transferred to a dwarf test tube. In the same manner the tube or bottle of standard suspension is shaken and an equal volume of this fluid is measured into the dwarf test tube, which is agitated so as to mix the fluids thoroughly. A drop of the mixture is placed immediately upon a clean slide and covered with a coverslip, care being taken to avoid air bubbles. The drop should be only large enough to form a thin film between the coverslip and the slide, and not so large that the coverslip floats. A coverslip of convenient size is 22 by 22 mm.

For counting, a magnification of about 350 is convenient; for example, one can use a Zeiss D achromatic objective and a Zeiss No. 3 Huyghenian eyepiece. Into the eyepiece is placed a small diaphragm of black paper, in the center of which is an aperture 4 by 4 mm., which gives a field of convenient size. In counting, one should avoid the extreme periphery of the area covered by the coverslip. The number of nucleated red cells and the number of non-nucleated cells in each field are enumerated. It is advisable to count two drops from the same mixture, and not less than 500 cells in each drop.

CALCULATION OF THE NUMBER OF RED CELLS CONTAINED IN EACH CUBIC MILLIMETER OF THE BLOOD EXAMINED

The sum of all the nucleated cells counted and the sum of all the non-nucleated cells is taken. The number of nucleated cells is divided into the number of non-nucleated cells. This factor is multiplied by the number of cells in each cubic millimeter of the standard suspension (20,000) and then by the dilution of the blood (200). The product is the number of red cells per cubic millimeter of the blood examined. It is clear that the method can equally well be applied to the counts of nucleated erythrocytes. In such a case the standard suspension must be made with non-nucleated red cells.

Example.—Suppose the standard suspension contains 21,000 nucleated red cells per cubic millimeter. The blood sample is diluted 1 in 200. A drop of a mixture of equal volumes of these two solutions is prepared for the microscope, and about fifty fields are counted. The sum of the nucleated red cells in the fifty fields is 319. The sum of the human red cells in the fifty fields is 405.

$$\frac{405}{319} \times 21{,}000 \times 200 = 5{,}294{,}000$$

Therefore the blood examined contains 5,294,000 red cells per cubic millimeter.

LEUKOCYTE COUNT

To determine the number of leukocytes in a given blood sample by this method, the procedure is as follows:

Into a dwarf test tube, three volumes of a 0.3 per cent. solution of acetic acid in distilled water, to which has been added 0.6 per cent. of a 1 per cent. solution of methyl violet (6 B) is measured. One volume of the blood to be examined is added, mixed carefully, and allowed to stand for a short time until the human red cells are hemolyzed. Then one volume of the standard suspension of nucleated red cells is added and mixed carefully. A drop of the mixture is placed on a clean slide and covered with a coverslip, the same precautions being observed as in the case of the red cell count previously described. For counting, the same objective and ocular are used as for the counting of red cells, but the paper diaphragm previously used in the ocular should be left out, and the nucleated red cells and leukocytes present in the whole field should be counted. The same total number of cells—i. e., about 500—should be counted as in the case of the red cell determination.

The calculation of the number of leukocytes per cubic millimeter of blood is performed in the manner already indicated above—namely, by dividing the number of nucleated red cells into the number of the leukocytes, and multiplying this factor by the number of cells in 1 c.mm. of the standard suspension. If dilutions other than those here indicated are used, the calculation will naturally have to be modified accordingly.

Example.—Suppose the standard emulsion contains 21,000 nucleated red cells per cubic millimeter. One volume of the blood to be examined is added to three volumes of the acetic acid-methyl violet solution, and mixed. To this mixture is added one volume of the standard suspension. Seventy fields are counted, giving a total number of 409 nucleated red cells and 145 leukocytes.

$$\frac{145}{409} \times 21{,}000 = 7{,}445$$

Therefore the blood examined contains 7,445 leukocytes per cubic millimeter.

ENUMERATION OF BACTERIA

For counting bacteria in a suspension, the following technic has been adopted:

A special standard suspension for this purpose is thus prepared: The mercuric chlorid-fixed nucleated cells are washed several times with physiologic sodium chlorid solution to remove the free mercuric chlorid, and then made up with sterile physiologic sodium chlorid solution to a standard of about 30,000 per cubic millimeter. A minute amount of formaldehyd is added to secure sterility. For the purpose of counting, a mixture of one volume of the standard suspension, one volume of the bacterial suspension suitably diluted and one volume of 0.5 per cent. methylene blue solution is prepared and counted, as in the case of the blood count, enumerating the nucleated cells and the bacteria in each field.

Example.—Suppose the standard suspension contains 30,000 cells. The bacterial suspension is diluted 1:200. Into a dwarf test tube is measured one volume of the standard suspension, one volume of the diluted bacterial suspension and one volume of 0.5 per cent. methylene blue solution, and the test tube is shaken to mix thoroughly the contents. A drop of this mixture is immediately transferred to a slide, covered with a coverslip, and counted as in the case of the white cell count, except that an oil immersion lens is used. Eighty fields are counted, giving a total number of 500 nucleated red cells and 400 bacteria.

$$\frac{400}{500} \times 30{,}000 \times 200 = 4{,}800{,}000$$

Therefore the bacterial emulsion contains 4,800,000 bacteria per cubic millimeter.

SUMMARY AND CONCLUSIONS

The method of counting human red cells and bacteria as described, when carried out carefully according to the directions given, yields results unsurpassed in accuracy by any other available method. Quicker and less fatiguing than the counting chamber, it is equally available for the counting of erythrocytes and leukocytes and bacteria.

Research on Vitamins in Fish Cod Liver Oil.—A German exchange cites a Norwegian journal to the effect that Profs. Axel Holst, Gran, Poulsson and J. Hjorth have been appointed a committee for fat soluble vitamin in cod oil. The Hygiene Institute of the University of Christiania has always devoted much attention to food problems on account of the prevalence of beriberi in the Norwegian merchant ships, and English research workers on rachitis have appealed to the institute to study ways and means for preparing cod liver oil for the market with the least possible injury of the vitamins. The government has appropriated 18,600 crowns for the work. The beriberi vitamin, it is said, is not injured by the heating to 100 C. as in salt fish, but canned fish is subjected to a higher temperature, and this vitamin cannot stand over 110 C.

TREATMENT OF TUBERCULOSIS OF THE ANKLE IN THE ADULT*

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In considering the treatment of tuberculosis of the ankle joint in the adult, several questions deserve special attention. Among these are:

1. What is the prognosis with conservative treatment?
2. What is the duration of conservative treatment in those terminating favorably, or better still, after what period may we expect the patient to return to work?
3. How long should conservative treatment be tried before resorting to operative measures?
4. In what percentage is amputation finally necessary?

In going over the literature it will be found very difficult to get information on these particular points. To state that a patient made a good ultimate recovery is not sufficient. The time element is a very important factor, and should receive special consideration. Strictly speaking, the title of this paper should limit consideration to the ankle joint proper, i. e., to the astragalotibial articulation; but, for practical reasons, it may be well to include tarsal disease, since the tarsal bones are often involved secondarily.

Tuberculosis of the ankle is said to occupy third place in order of frequency of joints involved in the lower extremity. The bones bearing most weight are especially disposed to invasion. The astragalus, tibia and os calcis, therefore, are more frequently affected than the smaller tarsal bones. The astragalus is the most frequently involved.

The characteristic signs and symptoms of tuberculosis of the ankle and tarsus are so well described in modern textbooks that repetition is unnecessary here.

While writers are not entirely in accord as to the seat of the primary involvement, the idea seems to be gaining ground that the primary seat is more frequently in the synovial membranes than in the bone. In the synovial type, the disease spreads more rapidly over the surface of the bone. In osteal lesions the disease process extends along beneath the cartilage, so that at operation the cartilage is frequently lifted off readily in large pieces. This undermining of the cartilage may account for the fact that when healing follows the conservative treatment, a slight degree of motion usually persists because of the remnant of cartilage interposed between the joint surfaces. The joint with a slight degree of motion is particularly disposed to lighting up under strain of a latent infection, so that in case only a slight and not really serviceable degree of motion persists, firm, bony ankylosis is preferable. In astragalotibial disease, swelling is usually first noticed on the front of the ankle on either side of and along the extensor tendons, because the capsule is thinnest at this point. Fluctuation is most easily elicited during dorsal flexion of the joint. Later, effusion appears also below the malleoli. Extension of the disease to the os calcis and scaphoid is frequent. In

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walking, there is a tendency to equinovalgus with rotation outward of the leg and foot, the latter thus taking a more passive part in progression.

This position avoids motion at the astragalotibial and astragaloscaphoid joints. In subastragalar disease the swelling is usually noted lower down. With few exceptions, statistics given cover combined adult and childhood cases. In view of the fact that both treatment and prognosis vary so markedly, it is deemed wise always to distinguish the two groups in offering statistics.

It is generally conceded that in childhood the prognosis is very favorable with conservative treatment. This should be carried out rigidly and consistently, paying attention to the usual hygienic measures, and emphasizing heliotherapy and local fixation. Occasionally minor operations, such as the laying open of sinuses or excavation of an isolated focus in a single bone, may be justifiable, but radical operations, removal of entire tarsal bones or excision of joints will rarely be called for. Humphries and Durham [1] reported twenty-nine traced cases, the average age on admission being 5½ years, and the average duration of treatment four and one-sixth years. Of these twenty-nine patients, twenty-three were cured and six died. Of the twenty-three cured, fifteen had normal function and eight various degrees of limitation of motion and deformity.

Gibney [2] reported thirty cases with "good, practically normal or normal function" in twenty-four, and ankylosis in six. The average duration of treatment was three and one-quarter years. In both of these series many of the cases were in children.

Ohse [3] reported on a series of 115 cases of tuberculosis of the ankle at the Strasbourg clinic between the years 1894 and 1906; almost one half of these were in children under 15 years. In his series, 26 per cent. came to secondary amputation. In 19 per cent. of the resected cases, the patients died shortly after operation from other forms of tuberculosis. About 50 per cent. of the cases showed good anatomic results, the others showing various degrees of deformity and shortening from nothing to 11 cm.

Maass [4] reported 167 cases from the Göttingen clinic. Of thirty-nine cases treated conservatively, twenty-nine came to operation later. He concludes that conservative treatment is contraindicated in all cases in which the roentgen ray reveals foci in bone. This view does not find acceptance so far as it applies to children.

Sever's [5] series of 213 cases of tuberculosis of the ankle and tarsus includes only children. A comparison of results obtained by conservative and operative means leads him to urge avoidance of all radical operations on bones and joints in children except when all else fails.

Most valuable statistics are those of Rogers,[6] who traced seventeen cases out of a total of twenty-seven of tuberculosis of the ankle in adults treated at the Massachusetts General Hospital. This is the only series found in which only adults are considered. Fixation gave good results in only three cases, and the duration of treatment was four years. Of the operative cases, resection was done in nine and amputation in eight. Rogers advises early resection or amputation to save time, believing that the duration of treatment should be cut down to not more than two years if possible. Considering these statistics as a whole, they are far from encouraging, and suggest that radical measures were often too long delayed. We believe that when the diagnosis of tuberculosis of the ankle joint is certain, and the roentgenogram shows definite bony involvement of the astragalus or of both astragalus and tibia in a wage earner, our attitude should be much the same as it is in tuberculosis of the knee. Few surgeons will now hesitate to recommend early resection of the knee. The statistics just quoted show clearly enough that conservative treatment, even if successful, requires too long a healing period; also that amputations are far too frequent to justify delay in resorting to radical measures in the type of cases cited.

Spengler, following a series of cases from Kocher's [7] clinic, found that 48 per cent. of the patients suffering from ankle tuberculosis had died of some form of tuberculosis within a ten year period. The restriction of normal activity incidental to ankle disease conservatively treated over long periods must be admitted as an important factor in predisposing to pulmonary and other tuberculous lesions. In persons other than laborers with definite tuberculous involvement of ankle joint and component bones, conservative treatment is fully justified for a period of perhaps six months. This will be sufficient to give one some idea as to the virulence of infection and resistance of the individual. If during this time there is no decided improvement, disappearance in whole or at least in large part of swelling, pain and infiltration of soft parts, much time will be gained by radical operative measures.

A good general plan for conservative treatment modified to suit the individual case would involve in active cases rest in bed for two weeks with elevation of the foot, and an elastic compression bandage over cotton, followed by a plaster cast from just below the knee to the toes. If the cast is well molded about the knee, it is not necessary to go above the knee. Beginning deformity can be corrected easily in this early period by gradual molding of the foot and retention in the corrected position by one or more plaster casts. Weight bearing should be avoided by the use of crutches and elevation of the opposite shoe. Later a Thomas splint, also preventing weight bearing, may be substituted. If in six months there is decided improvement, a double bar splint extending from below the knee into the shoe with molded leather ankle support and foot plate may be substituted in the later stages. General constitutional measures, exercises not involving the joint, and heliotherapy, of course, are presupposed here as in the treatment of all joint tuberculosis. The Bier treatment has not been used because it cannot be employed, at the same time maintaining consistent fixation. Attention to proper shoeing, especially to support of the arch, is advisable.

1. Humphries, R. E., and Durham, H. A.: End-Results of the Treatment of Tuberculosis of the Spine, Hip, Knee and Ankle Joints, J. A. M. A. **68**: 282 (Jan. 27) 1917.

2. Gibney, V. P.: Tuberculosis of Ankle Primarily Involving the Soft Parts, Tr. Am. Orthop. A. **13**: 225-228, 1900.

3. Ohse: Ueber Dauerfolge bei Behandlung der Fusswurzeltuberculose durch Resektion mit vorderem und hinterem Querschnitt, Beitr. z. klin. Chir. **77**: 275-292, 1908.

4. Maass: Tuberculosis of the Ankle, Arch. f. klin. Chir. **65**: 182-228.

5. Sever, J. W.: Tuberculosis of Ankle Joint and Tarsus, J. A. M. A. **55**: 2128 (Dec. 17) 1910.

6. Rogers, M. H.: Prognosis and Treatment of Tuberculosis of the Ankle in Adults, Boston M. & S. J. **164**: 811-813.

7. Kocher: Arch. f. klin. Chir. **34**, No. 2, 1883.

As in operative treatment of tuberculosis of the knee, the important point is to eliminate motion. This is perhaps not as easily obtained in the ankle as it is in the knee because it is more difficult to obtain firm and continuous bony contact. In the knee, the broad femoral and tibial surfaces are more readily held by long spikes or other means of fixation.

Of the thirty different approaches to the ankle joint referred to by König,[8] the Kocher method appears to be the most generally applicable and has been the method employed in the cases to be reported.

TECHNIC OF OPERATION

A vertical incision is made from a point just behind the fibula and about 2 inches above the external malleolus downward, curving forward below the tip of the malleolus and extending forward on the dorsum to the lateral border of the head of the astragalus, followed by division of the peroneal tendons low down below the external malleolus; division of the external lateral ligament of the ankle, and also of the posterior and anterior portions of the capsule as far as necessary in order to dislocate the foot completely inward so that the sole of the foot looks directly upward. This gives an excellent exposure of the interior of the joint, enabling careful inspection and removal of diseased synovial membrane as well as of articulating surfaces of tibia, fibula and astragalus. This entire articulating cartilage is removed without, however, sacrificing any more healthy bone than is necessary. Care is taken to eradicate any diseased tissue between the tibia and fibula. The denuded astragalus is shaped so as to fit accurately into the fork of the malleoli. The foot should be fixed in midposition between valgus and varus and in slight equinus to allow for the usual height of the heel of the shoe. When the astragalus cannot be saved, a tibiocalcaneal arthrodesis is performed by removal of cartilage on the superior portion of the os calcis and the lower portion of the tibia. In this case it is well to set the foot backward on the tibia in order to avoid the unwieldiness of the foot, just as in the Whitman astragalectomy for calcaneovalgus following infantile paralysis. In one of the modern textbooks it is stated that in case the disease is confined to the ankle joint, astragalectomy may assure removal of the disease with retention of motion. This advice runs counter to the generally accepted principle that elimination of motion is essential in controlling the disease. Calcaneotibial arthrodesis should therefore be added. In the cases reported, no special means of fixation was used outside of a snugly fitting plaster cast. Stiles uses a long, square nail introduced through the plantar surface of the heel through the os calcis, astragalus and tibia. He removes the nail in three weeks, when a plaster cast is applied. If the disease is confined to the astragalus and if it cannot be retained with safety without danger of extension of the disease to the joints, it may be removed and the foot displaced backward.

In Stiles'[9] series of fifteen traced cases, mixed adult and children, there were two in which ankylosis was not complete, slight flexion and extension being permitted. In one there was a discharging sinus. In every case the patient walked well without support.

In dealing with tuberculosis of the smaller tarsal bones there is no reason why the principle of arthrodesis should not be carried out in a considerable portion of the cases. Certainly in astragaloscaphoid and calcaneocuboid disease there should be no difficulty.

Curetting operations are condemned because one cannot see what is being done, healthy bone on which we must depend for firm bony ankylosis is likely to be removed and diseased bone and cartilage are left behind; also uninvolved synovial sacs may be entered. Primary closure of the wound is indicated wherever possible. In case of sinuses, drainage of superficial tissues is necessary. After-treatment should be conducted as in nonoperative cases. If the disease is very extensive and not likely to be controlled by methods outlined above, amputation should be performed. Statistics quoted here indicate that it would have been a time-saving and often a life-saving measure in many of the cases terminating unfavorably.

The cases forming the basis of this report are arranged in tabular form. From the table it will be seen that the first three patients returned to work in one year or less with ankylosis, bony or fibrous, and practically without deformity.

In Case 4 an amputation was advised but refused, an astragalectomy therefore being done with displacement backward of the foot and tibiocalcaneal arthrodesis. In this case there is still a discharging sinus, but the roentgen ray reveals less bone atrophy and almost complete disappearance of swelling of the soft parts. While this patient cannot as yet be regarded as cured, it is considered that probably a weight-bearing foot will be obtained.

SUMMARY OF CASES

	Age, Years	Duration of Disease When First Seen Months	Conservative Treatment	Operative Treatment	Postoperative Treatment	Time Since Operation	Site of Disease	Return to Work	End-Result: Function	End-Result: Deformity
1 R. B. W..	50	3	Cast, 2 months; Brace, 1 year	Minor	Brace, 2 years	13 years	Subastragalar	3 mos.	Practically Normal	None
2 E. M.....	19	4½	0	Arthrodesis, ankle	Cast, 3 mos.; brace, 1 year	5½ years 5½ years	Ankle joint	10½ mos.	Ankylosis	Equinus
3 A. W.....	26	24	4 months	Arthrodesis, ankle	Cast, 3 mos.; brace, 1½ yrs.	2 years	Ankle joint	12 mos.	Fibrous ankylosis	None
4 J. S.....	23	11	None	Astragalectomy, calcaneotibial arthrodesis	Cast, 6 mos.; brace to date	1¾ years	Amputation refused; ankle and subastragalar	Not returned	Ankylosis; sinus	Shortening 1½ inches
5 J. T.....	45	10	0	Arthrodesis, ankle	Cast, 3 mos.; brace	1¾ years	Ankle joint	Not returned	Fibrous ankylosis	None
6 H. K.....	30	6	0	Arthrodesis, ankle and subastragaloid joint	Cast, 3 mos.; brace	8 months	Ankle joint; subastragalar	Not returned	Still active disease	

8. König: Specielle Chirurgie 3: 749.

9. Stiles, H. J.: The After-Results of Major Operations for Tuberculous Disease of the Joints, Brit. M. J. 2: 1361 (Nov. 16) 1912.

In Case 5 the prognosis is good for a functionally useful foot within a two year period.

In Case 6 there is still active disease, and amputation may eventually be necessary.

CONCLUSIONS

The following statements are offered in answer to the questions propounded in the beginning of this article:

1. The prognosis of tuberculosis of the ankle in the adult with conservative treatment is poor. In the present series no case of astragalotibial disease was treated conservatively, the only nonoperative case reported being one of subastragalar disease.

2. The duration of conservative treatment in the cases terminating favorably, according to the only statistics referring to adults, is four years.

3. A six months period of conservative treatment will probably be sufficient to determine efficiency of this form of treatment.

4. In cases in which operation is performed early it is probably safe to say that the patient will return to work in between one and two years.

5. Statistics referred to show that amputation and also death from other forms of tuberculosis are far too frequent because conservative measures are persisted in for too long a period. In further reports, separation of cases into adult and childhood groups is urged.

ABSTRACT OF DISCUSSION

SIR ROBERT JONES, Liverpool, England: In the first place, it is difficult to discuss this paper because I agree fully with the advice it contains. I regard tuberculous joint disease in the young as different from that in the adult. In the adult I attack it by operating as early as possible because ankylosis is all that one can hope to attain by tedious waiting, and the sooner ankylosis is consummated the better. I regard tuberculous ankle joints in the young as a not very difficult condition to deal with, provided one gives ample and prolonged rest. This rest will need to be of at least three years' duration, and there should be no pressure on the front surface. Excision and arthroplasty in ankle joint tuberculosis in the young is not as satisfactory as arthrodesis, which should be performed as soon as the disease is diagnosed. The type of operation is not important, provided the raw surfaces are in good apposition. It has been stated that it is a bad thing to produce a calcaneus deformity; I might also suggest that it is as bad to err on the contrary side because the walking is not so good if you have an ankylosed joint too much in equinus. The more we realize that tuberculosis of the joint in the adult should be treated early and that we should aim for ankylosis the better, and any attempt to take away bone in the ankle joint for the purpose of producing mobility in the tuberculous is fundamentally wrong and distinctly dangerous.

Smallpox at Glasgow.—In a report by Dr. A. K. Chalmers, medical officer of health for the city of Glasgow, on the outbreak of smallpox, it is stated that since the outbreak began 545 patients have been admitted to hospital up till the end of November. Of these, 137 were children under 15 years of age, of whom 105 were unvaccinated, while the remaining thirty-two had been vaccinated in infancy. None of the children who had been vaccinated in infancy had died, while thirty-six of the unvaccinated children had died. Among the 408 patients in the group aged 15 and over, twelve were vaccinated, nine of whom had died. Evidence of previous vaccination was doubtful in eight cases, and two of these died. Of the remaining 389 patients vaccinated in infancy, 65 had died.—*Med. Officer*, Dec. 11, 1920.

SENILE CATARACT EXTRACTION

A COMPARATIVE STUDY OF RESULTS OBTAINED IN ONE THOUSAND, FOUR HUNDRED AND TWENTY-ONE OPERATIONS *

WALTER R. PARKER, B.S., M.D.
DETROIT

This report includes the results that I have obtained from operations for the extraction of senile cataracts in my private practice, together with those performed in the ophthalmic clinic of the University of Michigan from October, 1905, until January, 1921.

An attempt will be made to compare the results obtained by the various methods employed; and finally some of the more important features of the operation will be discussed.

In all 1,421 operations were performed. The methods employed, together with the number of operations in each group, were: combined extraction, 1,013; simple extraction, 156; Knapp operation, 49; Indian operation, 91; after trephine operation for glaucoma, 8, and preliminary iridectomy, 104, or a total of 1,421 operations.

TABLE 1.—VISUAL RESULTS OBTAINED WITH VARIOUS OPERATIONS

6/4	6/5	6/6	6/7½	6/9	6/12	6/15	6/20	6/40	6/60	Less Than 6/60	Not Recorded	Loss of Vitreous	Infected	Total
Combined Operation														
4	25	71	92	94	148	99	81	86	87	111	105	109 (10.7%)	5 (0.49%)	1,013
Simple Operation														
1	10	5	12	15	16	10	16	25	12	10	24	10 (6.4%)	2 (1.2%)	156
Knapp Operation														
..	1	6	6	8	8	1	4	2	6	6	1	5 (10.2%)	0	49
Indian Operation														
1	3	6	6	8	14	6	12	9	8	13	5	18 (19.7%)	1 (1.1%)	91
(A second case of infection occurred on 9th day following by patient)														
Preliminary Iridectomy														
0	0	7	5	8	8	8	5	3	7	38	15	10 (9.6%)	2 (2.0%)	104
After Trephine Operation for Glaucoma														
..	..	..	..	1	..	1	2	..	..	2	2	0	0	8
Total														1,421

In Table 1 is shown the total number of operations performed by various methods, together with the visual results obtained and the number and percentages of cases of loss of vitreous and the number and percentage of infections. The results are not classified as success, partial success or failure, but by the visual acuity obtained in each case as recorded.

These records of visual acuity are not accurate expressions of the results obtained. Many of them are the initial records made about two weeks after the operation was performed, while others are the final records, which in almost every instance were better than those first made. As the same discrepancy obtained in all the tables, however, a rough comparison may be permissible.

It is to be regretted that such a large number of cases must be tabulated as "not recorded." This is due in part to the fact that patients sometimes leave the hospital without reporting for refraction, and in part to an occasional incomplete record. From a record standpoint, this is especially unfortunate, as only the patients whose cases are most successful leave, while those with postoperative complications always remain.

* Read before the Section on Ophthalmology at the Seventy-Second Annual Session of The American Medical Association, Boston, June, 1921.

It would be much more definite to tabulate results surgically, irrespective of visual results obtained.

LOSS OF VITREOUS

All cases in which there was even a slight loss of vitreous are included in this report. The percentage of cases recorded in each of the various methods of extraction in which there was a loss of vitreous is given in Table 2.

TABLE 2.—PERCENTAGE OF CASES RECORDED WITH LOSS OF VITREOUS

Type of Operation	Number of Operations	Number of Cases	Loss of Vitreous, per Cent.
Combined	1,013	109	10.7
Simple	156	10	6.4
Knapp	49	5	10.2
Indian	91	18	19.7
Preliminary iridectomy	104	10	9.6
After trephine operation for glaucoma	8	0	0.0

It will be noted that loss of vitreous occurred more often in the Indian operation than in any other method of extraction (19.7 per cent.), while the loss in the Knapp operation was slightly less than in the combined, from 10.2 to 10.7 per cent. The number of combined operations was much greater, however, 1,013 to 49 Knapp operations. The percentage of loss of vitreous for the total number operated on was 10.1 per cent.

INFECTIONS

The percentage of cases recorded for each of the various methods of extraction in which infection took place is recorded in Table 3.

The percentage of infection for the total number operated on was 0.7 per cent.

In one of the cases in which a preliminary iridectomy was performed, there was a history of an old iridocyclitis. The eye had a subnormal tension, and the iris was bound down. It is possible that as a result of the operation, an old inflammatory process was lighted up and no new infection had occurred. As this could not be definitely determined, the case is included in the report as having been infected at the time of operation.

TABLE 3.—PERCENTAGE OF CASES IN WHICH INFECTION TOOK PLACE

Operation	Number	Per Cent.
Combined	5	0.48
Simple	2	1.2
Knapp	0	0.0
Indian	1	1.1
Preliminary iridectomy	2	2.6
After trephine operation for glaucoma	0	0.0

BACTERIOLOGY

As two of the cases of panophthalmitis occurred before the time when a routine bacteriologic examination was carried out, the records are not complete in this regard. The findings in the cases examined were as follows: *Staphylococcus albus*, 2; staphylococcus and streptococcus, 1; xerosis and streptococcus, 1; pneumococcus, 2; Morax-Axenfeld, 1; reported negative, 1, and not examined, 2.

An effort was made to determine, if possible, the number of cases in which the visual acuity of less than 6/60 was due to postoperative complications, or faulty technic. To determine this, the number of cases in which a known pathologic condition or accident could account for the loss of vision was deducted from the total number recorded as less than 6/60.

Table 4 shows the number of accidents and pathologic conditions to be deducted from the number recorded as "less than 6/60" in each method of extraction.

The number of failures in cases recorded as less than 6/60, due to postoperative complications or faulty technic, is given in Table 5.

It will be noted that in the Indian operation there was the highest percentage of failures, 6.5 per cent., in the Knapp operation the least, 0.2 per cent., and in the combined operation, 2.2 per cent. It must be mentioned that the patients on whom the Knapp operation was performed were all carefully selected, while those subjected to the combined operation included all who were unfit for any other procedure, except perhaps a preliminary iridectomy. The number of failures that resulted from the simple operation and from the preliminary iridectomy was about the same, being 3.2 per cent. in the former, and 3.7 per cent. in the latter.

TABLE 4.—ACCIDENTS AND PATHOLOGIC CONDITIONS TO BE DEDUCTED

	Combined Operation	Simple Operation	Indian Operation	Preliminary Iridectomy	Knapp Operation	After Trephine
Injury by patient	11	1	..	..	..	..
Vitreous opacities	26	1	1	6	2	..
Retinal detachment	6	..	2	1	1	..
Intra-ocular hemorrhage	4	..	..	..	..	..
Chronic uveitis	5	..	..	1	..	..
Chronic glaucoma	8	1	..	13	..	2
Corneal opacities	11	1	..	..	..	..
Optic atrophy	2	..	..	..	..	..
Choroiditis	2	1	4	1	2	..
Organized vitreous	2	..	..	1	..	..
Hemorrhagic retinitis	3	..	..	..	..	..
Atrophic eye	..	..	..	1	..	..
Amblyopia	4	..	..	..	..	..
Retinitis pigmentosa	2	..	..	..	..	..
Intractable patient	2	..	..	..	..	..
Totals	88	5	7	24	5	2

A comparison of the various methods of extraction as regards both loss of vitreous and number of failures in cases recorded as less than 6/60, due to postoperative complication or faulty technic, is given in Table 6.

From this comparative study, it appears that in the Indian operation, there was a higher percentage of loss of vitreous and of failures due to accident and postoperative complications than was shown in any of the other methods employed. In the combined operation, there was the least percentage of failure due to accident or postoperative complications, while in the simple operation there was the smallest number of cases of vitreous prolapse. These percentages refer only to cases recorded as visual acuity less than 6/60, and not to the total number in which operation was performed.

TABLE 5.—FAILURES DUE TO POSTOPERATIVE COMPLICATIONS OR FAULTY TECHNIC

Operation	Vision Less Than 6/60	Accidents Known Pathologic Condition	Failure in Cases Recorded as Less Than 6/60 Due to Postoperative Complications or Faulty Technic	
			Number	Per Cent.
Combined	111	88	23	2.2
Simple	10	5	5	3.2
Knapp	6	5	1	2.1
Indian	13	7	6	6.5
Preliminary iridectomy	38	34	4	3.7
After trephine operation for glaucoma	2	2	0	0.0

While no attempt will be made to give all the complications that were encountered in this series of cases, a few of the more unusual ones will be mentioned, simply as a matter of record.

EXPULSIVE HEMORRHAGE

There were three cases of expulsive hemorrhage, 0.21 per cent. This complication occurred in patients with advanced arteriosclerosis with high blood pressure. But there was no indication that a hemorrhage was more likely to occur than in any one of a large number of patients with equally severe symptoms on whom a similar operation was successfully performed. Whether or not hemorrhagic retinitis existed at the time of operation could not be determined.

TABLE 6.—COMPARISON OF VARIOUS METHODS OF EXTRACTION

Operation	Loss of Vitreous		Failure in Cases Recorded as Less Than 6/60 Due to Postoperative Complications or Faulty Technic	
	Number	Per Cent.	Number	Per Cent.
Combined	109	10.7	23	2.2
Simple	10	6.4	5	3.2
Knapp	5	10.2	1	2.0
Indian	18	19.7	6	6.5
Preliminary iridectomy	10	9.6	4	3.7

CATARACT DELIRIUM

Thirty-three cases of cataract delirium occurred in 1,421 extractions, 2.3 per cent. Of this number twenty-seven were males, and six were females. The average age for both sexes was 72. The youngest male was 51, and the oldest 81; the youngest female, 62, the oldest, 82. A history of alcoholic excess was given in eleven cases, 33.3 per cent.

DETACHMENT OF THE CHOROID

Detachment of the choroid was noted in six cases, but as no careful study was made of the interior of the operated eye until the time of discharge from the hospital, this number does not in any way indicate the frequency of this complication. In all the cases noted, with one exception, spontaneous reattachment took place. One patient was lost to observation before reattachment occurred.

COMMENT

The combined operation with a conjunctival flap was performed more than twice as many times as were all the other operations taken together, and I regard it as the most satisfactory method of procedure in all but specially selected cases.

Unfortunately, the records were not complete as regards the number of times the iris prolapsed in cases of simple extraction.

TABLE 7.—FREQUENCY OF PROLAPSE IN CASES OF SIMPLE EXTRACTION

Number of Cases	Without Atropin		Number of Cases	With Atropin	
	Number	Per Cent.		Number	Per Cent.
47	5	10.8	48	2	4.1

A special study of a series of cases was made to determine the relative frequency of prolapse, with or without the use of atropin, before the time of operation. The results are given in Table 7.

Since making this test, atropin is instilled routinely the night before the day of operation and repeated after the operation is completed, unless there exists some contraindication for its use.

The simple extraction was performed in young patients and in selected senile cases, in which the cornea was large and the iris well dilated.

The patients in whom the iris was left intact were examined on the day following the operation, and if a prolapse was present, an iridectomy was performed at once, no attempt being made to replace the iris.

That the Indian operation can be successfully performed in certain cases there can be no doubt. But when complications arise, they are often of such a serious nature as to force many to the conclusion that the combined operation is a safer procedure to follow. I fully agree with Knapp, who came to the conclusion that "the lens cannot be dislocated by external manipulation alone, without in many instances subjecting the eye to greater pressure than seems wise."

After an experience comprising ninety-one extractions by the Indian method, I am convinced that in my hands the older operation, as a routine procedure, gives better results.

The traction method of extraction as described by Knapp and Török seems to offer the best method of extracting the lens in its capsule. It is safer than the Indian method, in that if the capsule is ruptured, the lens can be delivered in the ordinary way. The risk of loss of vitreous is less, and a distorted pupil or disturbance of the anterior vitreous rarely occurs. Thus the three cardinal complications of the Indian operation are minimized.

In this series, an attempt was made seventy-seven time to deliver the lens in its capsule by traction, and was successfully accomplished forty-eight time, 62.3 per cent. Vitreous was lost five times, 10.2 per cent. In six cases the resulting vision was below 6/60. In five of these cases there was a pathologic explanation, while in one case the failure was due to postoperative iridocyclitis. Of the five cases, two patients had dense vitreous opacities, one detachment of the retina, and two showed an advanced choroiditis. The iridocyclitis occurred in a patient, aged 51. This was the only attempt made to extract the lens in its capsule by traction in a patient below 60 years of age.

In order to make a comparative study of the visual results obtained in cases of extraction after the Knapp method, an equal number of consecutive cases in which operation was performed by the combined method was taken for comparison. A second refraction was made in every case, and a secondary operation was performed if necessary. It was somewhat surprising to find that the average vision in each series was practically the same, about 6/10. In both groups, cases with any pathologic changes that could account for the diminution of vision were eliminated. There were thirty-nine cases of intracapsular extraction, and forty-one after the combined method, used for comparison. The exact visual acuity in each group was: Knapp operation, 19/30; combined operation, 21/35.

Whether or not it is wise to attempt to deliver the lens in its capsule as a routine procedure has not been fully established. Perhaps the posterior capsule has a protecting function not to be neglected. Certain it is that the fear of complications arising from performing a secondary operation after the Ziegler method is no argument in favor of resorting to any procedure that is more hazardous than the extraction with capsulectomy.

In this series of cataract extractions, a secondary operation after the Ziegler method was performed more than 200 times. While a perfect opening in the capsule was not always obtained, in not a single case, as far as could be determined, did there occur a serious

reaction or after-result that made the case more complicated than it was before the operation was performed.

PRELIMINARY IRIDECTOMY

A preliminary iridectomy was performed in cases in which the cataracts were developing equally in both eyes and when a useful vision could be obtained by the use of a mydriatic, also in cases known to have fluid vitreous, or in which the operation on the fellow eye had been followed by serious inflammatory reaction, and in all cases with even suggestive symptoms of glaucoma.

I fully appreciate that the many elements which enter into the successful management of cataract cases from an operative standpoint make it difficult to record results or draw accurate conclusions. It is possible, however, that as our knowledge increases, we may be able to make a choice of procedure that will lead to better average results. But it would seem for the present, at least, that any procedure must stand the test of comparison with the combined operation performed on patients selected with equal care.

The presentation of this series has been made possible through the cooperation of the various members of the ophthalmologic staff at the University of Michigan during my entire service, and I wish to express my sincere appreciation for their valuable assistance.

David Whitney Building.

ABSTRACT OF DISCUSSION

Dr. Henry Smith, London: Dr. Parker admits that in 10.7 per cent. of cases in which the combined method of operation was used there was an escape of vitreous, in some cases more and in some less. I am sure that Dr. Parker will admit that if we can do the intercapsular operation without an undue escape of vitreous, it is the preferable proceeding. And I think we should be able to do it within that limit. Many of the men who have tried to perform this operation have been hampered by not taking care to train the assistant beforehand. If you succeed in having your assistant carefully trained beforehand so that the patient has no control over the eyeball through the orbicularis muscle, and you commence by selecting patients over 60, I see no reason why men with a little manipulative experience should not be able to perform the operation with escape of vitreous in not more than from 5 to 10 per cent. of the cases. The difficulty of dislocating a lens depends on two factors. After about 60 years the suspensory ligament is the only thing you have to overcome. Between 40 and 30, a great deal of the difficulty is in dislocating the lens from its attachments to the hyaloid as well. Under 30, it takes a clever man to dislocate it at all for that reason. Occasionally, in doing the old operation, the moment I make the incision in patients over 60, the lens is dislocated and the wound in the vitreous disappears. One should make the incision 180 degrees; so the lens can be delivered entire. If you go on crushing, it is necessary either to close up that eye or with a two-fifths incision to make a mess of it. If you scratch the capsule, before you are done you will have mixed up a lot of lens matter and the vitreous material will escape and cause complication. If we could devise some means of paralyzing the orbicularis say, for one day, there would be no reason why there should be any escape of vitreous at all. I have seen the Knapp operation performed, and it seemed to me that it would have been much simpler to have touched the cornea on the outside and driven the lens out. With reference to the Indian operation, Dr. Parker's figures, showing 19.7 per cent. of cases in which escape of vitreous occurred, we may regard as a little high. I am making no sinister comment on Dr. Parker's work, but I might say that he is a novice in the procedure. Probably he did not have a good assistant and the circumstances were unfavorable.

Dr. Vard H. Hulen, Berkeley, Calif.: No criticism can be made of Dr. Parker's eminently practical paper, but it is unfortunate that he was not able to include in his 1,421 cases some experience with the vacuum extraction operation. Dr. Barraquer, of Barcelona, a Spanish cataract operator, has already reported more than a thousand extractions by the vacuum method. The priority in the vacuum operation belongs to the United States. I published a paper in December, 1910, describing in detail my operation for extraction in capsule by vacuum fixation of the cataract successfully used a number of times, and I demonstrated the method before this section six years before Barraquer's first publication in July, 1917. Many inquiries were made about my apparatus, and, on request of an ophthalmic operator of international reputation, I sent my instruments to him in India. Many months later they were returned with a courteous letter containg the significant statement that it was "a wonderful apparatus for sucking up vitreous." His evident experience discouraged me from putting my apparatus in the hands of others until I had perfected it. Undoubtedly this operator, of great experience with the usual cataract operation, had found that the instrument with a dangling rubber tube interfered with his usual delicacy of manipulation and in introducing the cup had slightly displaced the lens, thus allowing the vitreous to present, so that naturally the globe was emptied when he applied the vacuum. If the cup is properly introduced and placed, the hard lens is between the vacuum and the vitreous and no damage can be done no matter how strong the vacuum may be. The principle of Barraquer's operation which he calls "phakoersis" is identical with that I described several years before, and I can see only unimportant improvements made on my rather crude apparatus. I would advise those interested to be careful in choosing their apparatus and be patient but cautious in its use. From my experience I am convinced that the vacuum method, when the instruments have been perfected, will be the one of choice.

Dr. Lucien Howe, Buffalo: The suction method has been tried a number of times, and the principle of it is undoubtedly a very excellent one. Fifteen or twenty years ago an instrument was devised, which I found very imperfect, in that it was nothing more than a pipet in principle. It was made in France. Its curve did not fit the curve of the lens; I had disastrous results and gave it up.

Dr. Allen Greenwood, Boston: This paper is the most complete report on the final result of cataract operation that has been made to the Association, and we all owe Dr. Parker a debt of gratitude for presenting it. Any ophthalmologist in the world would be proud of his record and his ability to present final results, which so few of us do.

Dr. Walter Eyre Lambert, New York: Dr. Parker spoke of using atropin before the operation. I wish to ask whether he uses it after the operation as well. We frequently use physostigmin (eserin), but the use of atropin before the operation is a happy suggestion.

Dr. Aaron S. Green, San Francisco: The intracapsular operation has recently assumed such an extraordinary prominence that I think a word of caution will not be out of place. One thing must be borne in mind: Every eye is not suited for the intracapsular operation, whether by the method of Smith, Barraquer or Hulen. If you select patients beyond the age of 60, with deep-set eyes and lax lids, who are not nervous, you will get a good result. But if you pick eyes that look easy because they are prominent, you may have loss of vitreous with possibly a choroidal hemorrhage.

Dr. Walter B. Lancaster, Boston: Ten years hence we shall find the combined operation in the hands of average operators showing better results than any other method. Consider, for instance, how the combined operation would take us by storm if it were now published for the first time; how, with it, we avoid the difficulties that are being apologized for in these other operations, and in particular how we avoid the trauma, the rough handling of the eye, which is inevitable with most intracapsular methods.

Dr. William H. Wilder, Chicago: I am not a particular advocate of preliminary iridectomy, but a sort of tradition obtains in our profession that this method of operating in any case is one of the safest procedures, and it is, therefore,

often practiced before cataract extraction in those cases in which we know there is some complication or in which an accident has happened to the other eye. So it was with no little surprise that I noticed in Dr. Parker's list of cases such a poor showing for preliminary iridectomy. It simply illustrates that statistics may be misleading, and I think they may be in this case, if we endeavor to form any conclusion from them in regard to the value of preliminary iridectomy in the extraction of cataract. Referring to Table 1, under the heading, "Preliminary Iridectomy," we find that forty-five of the 104 patients operated on in this way recovered a vision of only 6/60 or less. I think we would all like to know more specifically what the conditions were, in this group of patients operated on by the preliminary method, that made the showing so unfavorable for this particular method of operation, which tradition has told us is a very safe procedure. For example, the number of infections following in the case of 104 patients so operated on is two, a percentage of 2.6—twice as high as any other operation. One of these, however, was a case of badly diseased eye. The assumption that this group was largely composed of cases of the most desperate character would be justified, 2.6 per cent. of infections in a group of 104 cases being rather striking. Then again, the tables show loss of vitreous in 9.6 per cent. of the cases in which preliminary iridectomy was done, approximately 3½ per cent. more of accidents of this character than we have in simple extraction, which some us do not do as frequently as formerly, feeling that it is a more dangerous operation. Here, again, the probability is that there were complicating conditions present which made it advisable to do a preliminary iridectomy. It would, therefore, be unwise to form any conclusion from this series in regard to the value of preliminary iridectomy. I do not wish to appear to criticize the excellent report, but rather to voice the opinion that we must be extremely cautious in the matter of drawing too general conclusions from any number of statistics, particularly in regard to methods of operative technic. Valuable as they may be to the individual who makes them and knows all the conditions pertaining to them, they may be misleading as far as general conclusions are concerned. It is difficult to get a series of exactly similar cases on which to make comparisons.

DR. FREDERICK H. VERHOEFF, Boston: In his statistics, Dr. Parker makes no distinction between one type of cataract and another, and none of those who have discussed his paper have apparently attempted to determine the types of cataract best suited to the intracapsular method. This is an essential point. About six years ago I started doing the intracapsular operation by means of forceps, and I have done it ever since in certain types of cataract. At first I tried it in all sorts of cataracts and gradually found that in certain types of cases it was very successful, and that in others the capsule was liable to rupture. According to my experience, in mature cataracts the capsule ruptures so often, and the results of the ordinary method are so good that in most of these cases it is better to do the usual combined operation. In cases of immature cataracts it is more hazardous to use the capsulotomy operation and it is particularly advisable, if possible, to remove the lens in capsule. Fortunately, I have found that with the exception of cases of hypermature cataract, they are the most suitable for the intracapsular operation, especially when the anterior cortex beneath the capsule is perfectly clear. Of course, the patient sometimes, by making a sudden jerk of the eye, ruptures the capsule. But I expect in all cases of immature cataract to remove the lens in capsule. The hypermature cataracts are the easiest ones of all to remove in capsule, and in many of these cases it is perfectly safe to remove them without an iridectomy. In a few of these cases, it is difficult to grasp the capsule because the lens is so like a bag that you cannot pinch up a fold. Cases of sclerosed lenses are not suitable for my method of operation, for if the lens is thoroughly sclerosed the capsule will rupture every time. Moreover, sclerosed lenses are especially suitable for the capsulotomy method. I advise every one to retain the method he is accustomed to for mature cataracts and sclerosed lenses, but to employ some method of intracapsular extraction for immature and hypermature cataracts.

DR. HAROLD BAILEY, Springfield, Mo.: Dr. Parker's statistics are honest. Honest statistics are rather unusual, in fact, quite rare. Quite often we are served with statistics that are overdone and so highly flavored that it is very difficult for us to digest them. As I read these statistics, I thought they were just about right, a trifle underdone, if anything, and the more to be relished for that reason. I have always been in favor of a preliminary iridectomy, and in Dr. Parker's statistics I was surprised that this procedure presented so bad an appearance, so far as results were concerned. Out of seventy-nine recorded cases in which preliminary iridectomy was done, thirty-eight patients, or nearly 50 per cent., obtained less than 20/200 vision. I wondered whether this apparently unfavorable showing might not be due to the fact that a preliminary iridectomy was done only in complicated cases, on eyes in which the hazards of an operation were greater. On the other hand, if preliminary iridectomy is safer in a complicated cataract, then would it not also be safer in an uncomplicated one? I hope Dr. Parker will tell us in what class of cases he selected preliminary iridectomy.

DR. WALTER R. PARKER, Detroit: As Dr. Smith was talking, I could not but wonder what the results in this series of cases would show if the operations had been performed in visiting clinics, with unfamiliar surroundings and inexperienced assistants. I think it is only fair not to judge the relative merits of the Indian operation by the work done under these circumstances. As to the vacuum method of extraction, I have had no experience with it. No matter what method of procedure we employ, I feel that in this country, at least, the results obtained by the combined operation should be the standard by which all other procedures are to be compared. The individual operator should be sure that he is getting better results than he himself could get by the use of the combined operation, before advocating any new method of procedure. Dr. Smith's point is well taken in that I am a novice in the Indian operation. I performed my first Indian operation in the spring of 1906, and reported my first case in the April number of the *Ophthalmic Record* of that year. As far as I know, this was the first case published in this country. After reading Smith's report, which, as I remember, covered 17,000 cases, I went to the clinic at the university the next day and did an extraction in the capsule, using an ordinary squint hook and lid elevator, following the directions given by Smith as nearly as possible. The lens was delivered without difficulty and with no accident, and convalescense was uncomplicated. The result was perfect. To prove that the patient was satisfied, exactly seven years from that date he appeared at the clinic and requested that the same type of operation be done on the other eye. I had then in my possession Smith's special instruments with which I performed the operation. The result was equally good. As I increased the number of operations, however, the complications began to increase, and the query arose as to whether I was giving my patients the best service I could if I continued this method of procedure. I was encouraged at times to renew my efforts, as enthusiastic reports of the results obtained by others appeared in the literature. I have tried to show in this report, that, in my hands, the results in ninety-one extractions have not been as satisfactory, on the whole, as in cases in which the combined operation was performed. In regard to Dr. Wilder's question as to the preliminary iridectomy: Only in special cases was this procedure followed. Answering Dr. Lambert's question, atropin was instilled both before and after the time of operation when a simple operation was performed. I was trained to use physostigmin in every case of simple extraction. By accident, atropin was instilled in one of my cases before the operation, and at the subsequent dressing. The patient did so well that I was encouraged to make a comparative study. The point made by Dr. Verhoeff is a most important one. The character of the cataract should determine the method of extraction, rather than our enthusiasm for any one method of procedure. In regard to the extraction of immature lenses by the combined method, I see no difference in the final results so long as the cortical matter is removed. There is, however, this difficulty: it is not so easy to tell when the clear cortical matter is all removed, because of our inability to see it.

ASEPTIC NEPHRO-URETERECTOMY

TECHNIC AND INDICATIONS *

EDWIN BEER, M.D.
NEW YORK

There are a number of pathologic conditions of the ureter and kidney in which it is advisable to remove the kidney and ureter at the same sitting. The two essential desiderata in developing an operative technic for such a removal are: first, that the operative risk should not be materially increased by the addition of the ureterectomy to the nephrectomy; and, second, that every means should be employed to avoid opening the channels involved so as not to infect the extensive retroperitoneal wound. In other words, an aseptic nephro-ureterectomy must be done. It is perfectly feasible to do the latter by the usual technic of a very long incision beginning at the last rib and extending obliquely forward in front of the anterior superior spine and thence downward toward the external ring. This gives the necessary exposure for a complete and aseptic operation, but it is much too extensive an operation and fails to meet the first desideratum.

Years ago this method, with a large incision, either alone or combined, in the female, with a vaginal incision, received considerable support from such men as Howard Kelly. An improved method, involving a much less formidable incision, was described by Howard Lilienthal [1] some years ago. In this procedure, he first disposed of the vascular pedicle of the kidney through the lumbar incision and removed the kidney. He opened the ureter (or pelvis) in the lumbar wound and introduced a silk bougie into the ureter, pushing it well down toward the bladder end. He next freed the ureter by blunt dissection through the lumbar incision as far as his hand could reach. Then, through a small extraperitoneal second incision, to the outer side of the rectus muscle low down in the iliac fossa, he exposed the easily recognized ureter containing the silk bougie. This part of the ureter was then freed down to the bladder where, between two ligatures, the ureter was cut across (after the withdrawal of the bougie) and the whole ureter was delivered through this small incision. To avoid a marked contamination of the wound, Dr. Lilienthal tied the lumbar ureter to the bougie. The kidney and ureter would, in this wise, be completely removed in two pieces with, however, some risk of infection of the retroperitoneal spaces. This improvement over the earlier operation, through one long incision, failed, however, to meet the second desideratum referred to above: It opened the infected channels to allow the introduction of the silk bougie, and for that reason did not meet the demands of an aseptic nephro-ureterectomy technic; moreover, owing to stenosis or ureter tumors, the bougie might not pass through the length of the ureter, and its assistance would, therefore, in such a case, be reduced to a minimum.

The method about to be described is somewhat similar to that of Dr. Lilienthal and was developed as the result of meeting the same problems some ten years ago. As it meets the two essential desiderata, though it has been described by me on several other occasions, I feel that it should be more fully described so that others may avail themselves of the experience that my associates and I have had with this technic. I myself have done the operation eleven times for a variety of conditions, with no mortality.

TECHNIC

The patient is placed in the usual lateral position and the kidney is exposed as in an ordinary nephrectomy. The ureter and pelvis are carefully freed from the vascular pedicle, which is securely tied. Then the ureter is bluntly freed (care being taken to avoid tearing the peritoneum) as far down as the fingers can reach. This is usually possible as far as the level of the crossing of the large iliac vessels; at times the dissection may reach even lower. In this dissection, the kidney may be dislocated to the upper recess in the depth of the wound, or it may be brought out of the wound altogether, to produce tension on the ureter and facilitate the dissection. The level of the iliac vessels having been reached, a long and heavy silk traction ligature is placed on the exposed lower ureter in the depth of the wound. If the kidney has been delivered, it is replaced in the wound and the wound is protected with pads while the patient is lowered from the kidney bridge, the silk traction ligature being brought out over the patient's abdomen so that, during the next step of the operation, it is ready to serve the operator in the rapid identification of the pelvic ureter. Then the patient is turned almost on his back, and a small incision, along the outer border of the rectus muscle through its sheath, as for an extraperitoneal ureterolithotomy, is made. By intermittent traction on the heavy silk ligature, the ureter is rapidly recognized and freed from its extraperitoneal bed down to the bladder, where, between two ligatures, it is severed either with a cautery or with a phenolized knife; then, by further traction on the silk ligature, the freed ureter is delivered from the lumbar wound with the kidney attached, the upper ureteral channels remaining completely closed throughout the operation. The small anterior incision is rapidly closed in layers with a small rubber dam drain in the lower angle. Having protected this second incision with gauze dressings, the patient is again rolled on his side, the kidney wound inspected to be sure that there is no oozing, and the lumbar wound closed in layers with tube or dam drainage, as indications suggest.

COMMENT

This whole procedure is remarkably simple. The ease with which the ureter is located in the lower incision by intermittent traction on the heavy silk ligature applied through the lumbar wound allows the operator to execute this additional step of the operation with rapidity and without any great difficulty, so that practically no additional risk is run by the patient. The extraperitoneal anterior incision, along the outer border of the rectus through its sheath, is a practically bloodless approach and is very quickly executed. By the technic described, the whole supravesical tract is removed unopened, and no chance of contamination of the retroperitoneal spaces is possible; in a word, it meets completely the desiderata mentioned above.

CASE GROUPS

Though the indications for this operation are not frequently encountered, there are very definite groups of cases in which operation should be performed in this way. To date, I have performed this operation in three pathologic conditions, but I believe there are other conditions in which this procedure is indicated. In my series of cases, I have performed aseptic nephro-ureterectomy for: (1) neoplasm of the ureter (or of the kidney) especially papillary growths (one case);

* From the Surgical Service, Mount Sinai Hospital.
* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.
1. Lilienthal, Howard: Ann. Surg. 53:541 (April) 1911.

(2) tuberculous kidney with marked stricture formation in lower ureter with or without empyema of the ureter (nine cases), and (3) impacted stone in the lower ureter associated with extensive hydronephrosis and hydro-ureter, with or without secondary infection (one case).

In addition to these three conditions, I believe this operation will be indicated in those unusual cases of unilateral extensive, probably posttraumatic but possibly congenital hydro-ureter and hydronephrosis cases in which the kidney is converted into a useless sac, as well as in cases of stricture of the lower ureter which have led to the pathologic changes mentioned above.

In brief, I should like to describe three cases, illustrative of the types of patients whom I have operated on with this technic:

REPORT OF CASES

CASE 1.—*Aseptic nephro-ureterectomy for primary papilloma of the ureter.* S. H., a man, aged 61, first seen, Feb. 4, 1920, had had four attacks of hematuria, the first attack occurring twelve months ago, then following every three to four months thereafter. There was no pain with the bleeding. The blood was bright red and clotted. There was no obstruction to the outflow from the bladder. The frequency was practically normal; at night, there was one urination. There was a past history of ulcer of the stomach and chronic bronchitis and emphysema. There had been no recent loss of weight.

February 4, a cystoscopy, made while there was no bleeding, revealed: stricture of the deep urethra which bled on stretching; intra-urethral and vesical adenoma formation in the prostate which bled readily; a fair-sized diverticulum in the anterior bladder wall whose interior could not be completely inspected (hidden tumor?); a good indigo output from the left kidney, but none seen coming from the right; specimen from the left full of blood cells, probably traumatic, with no obstruction on this side; obstruction on the right side at 8 cm. and no specimen obtained. After the withdrawal of the catheter from the right ureter, there was a continuous flow of blood from this side. Palpation suggested an enlarged right kidney.

A diagnosis of stone in the right ureter or tuberculous stricture or tumor of the ureter was made. A roentgenogram was negative for stone, and no tubercle bacilli could be recovered. To determine accurately the source of hematuria, the patient was instructed to return during an attack. After several attacks he came in with his bladder full of clots which he could not express.

October 18, after emptying his bladder, it was evident that the blood came from the right ureter, which was obstructed at 7 cm. On the strength of these findings, the diagnosis of tumor of the right ureter was made, and it seemed probable that the original growth was in the pelvis. Therefore, a nephro-ureterectomy without opening the urinary channels was advised. Owing to the patient's poor general condition, there was some hesitation as to the advisability of going ahead. Finally, however, the operation was decided on, not only to get rid of the source of bleeding but also to obviate the possibility of being forced at some future time to do a palliative cystostomy to empty his bladder of clots, which he might be unable to void because of his considerably enlarged prostate.

November 1, under gas-oxygen, the kidney was exposed and found to be markedly hydronephrotic, with a dilated ureter. The vascular pedicle was tied and the large ureter was freed well down across the pelvic brim, a silk ligature being applied to it for the purpose of identification. Then the patient was rolled partly on his back and the pelvic ureter was exposed through a pararectus extraperitoneal incision and ligated well below the tumor, which could be distinctly felt in the lower ureter. At the site of the growth, the ureter was firmly adherent to the pelvic wall. After being doubly ligated near the bladder, the ureter was cut between and, by traction on the silk ligature, placed on the ureter through the lumbar wound. The whole ureter and hydronephrotic kidney were withdrawn in one piece and unopened. The patient made a rapid convalescence.

Aseptic nephro-ureterectomy for primary benign papilloma of the lower ureter producing hydro-ureter and hydronephrosis.

The specimen, an illustration of which is reproduced herewith, showed a fair sized hydronephrosis and hydro-ureter with a papillary growth near the lower end. The microscopic report by Dr. Mandlebaum stated that the growth was benign.

CASE 2.—*Aseptic nephro-ureterectomy for tuberculosis of the right kidney, with marked stricture formation at the lower end of right ureter.* I. K., a man, aged 38, gave a typical history of renal tuberculosis with involvement of the right half of the bladder, with tuberculous ulcers, and marked inflammation; the left half of the bladder was normal; fair indigocarmin excretion; and stenosis of the right ureter at 4 cm. from the bladder, which did not allow various size catheters in the ureter. No specimen from the right side could be obtained by ureteral catheterization; the specimen from the left side showed normal urine.

March 24, 1920, an aseptic nephro-ureterectomy was performed at a clinic given at the Mount Sinai Hospital before the American Urological Association. The kidney showed multiple papillary and cortical tuberculous areas. The ureter was extensively thickened and contained several strictured areas—the lowest and most marked stricture being near the bladder. The patient made an uneventful recovery; the urine immediately after the operation became clear; his bladder symptoms rapidly disappeared, and he gained, within a year, from 15 to 20 pounds.

CASE 3.—*Aseptic nephro-ureterectomy for stones in the kidney and lower ureter, with complete obstruction of the ureter, hydro-ureter and hydronephrosis.* S. B., a woman, aged 34, had been sick two years. Four days before she was admitted to the hospital, she had several attacks of pain with a rise in temperature. Roentgen-ray examination revealed a stone in the kidney, and low down in the right ureter a stone about 1 cm. in diameter.

Oct. 18, 1916, a cystoscopy revealed good indigocarmin concentration from the left kidney, but no indigocarmin from the right side. The right ureter obstructed at 6 cm. No specimen from the right kidney could be obtained.

October 18, through a typical lumbar incision, the kidney was exposed and found to be small and atrophic, with a dilated pelvis and no functional parenchyma left. The ureter was found dilated, and a typical nephro-ureterectomy was performed, the ureter being severed close to the bladder below the obstructing calculus. Examination of the specimen revealed a typical infected hydro-ureter and hydronephrosis, with atrophy of the parenchyma behind the ureter stone, and a second stone situated within the kidney pelvis. The patient made an uneventful recovery.

CONCLUSION

With increasing experience in doing this operation, and in view of the excellent results obtained, I feel that I am fully justified in recommending aseptic nephro-ureterectomy to meet the indications herewith enumerated.

11 East Forty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. JOHN R. CAULK, St. Louis: There is no doubt that Dr. Beer's technic has its indications for tumors in the renal pelvis and ureter. I have never done a complete ureteronephrectomy because the part we leave behind is liable to be involved and if we try to remove it a fistula may result. I believe that, instead of the persistent fistulas resulting from the lower end of the ureter, they come from the infected perirenal fat, and in following a number of these cases I found, in making roentgenograms after injecting material, that most of the injected material goes to the kidney pedicle rather than to the ureter. I have tried all sorts of things with the ureter, but all the cases have closed in about the same way. Many of them have closed primarily, but most have opened, to close later. Certainly this technic simplifies this type of operation.

DR. RICHARD F. O'NEIL, Boston: In regard to the indications for this operation in a certain number of cases they are very clear. I have in mind a private case in which I performed a nephrectomy for congenital hydronephrosis. At the time I did not realize the amount of dilatation of the lower end of the ureter and did not remove it. Since then the patient has, at times, had a colon bacillus infection of the urine from the stump of the ureter which fills up occasionally and is relieved by lavage. The injected roentgenogram shows a sausage-like shadow about 4 inches long at the lower end of the ureter. This patient would undoubtedly have been better off had I performed the complete operation.

DR. EDWIN BEER, New York: The experience Dr. O'Neil spoke of in connection with the stump of the ureter is not uncommon. I have seen the same thing where these infected stumps have caused trouble and practically chronic invalidism. Naturally, this would have been prevented if the ureter had been removed down to the bladder. In connection with the frequency of this operation in tuberculous cases, I did not wish to give the impression that it is always done. I was asked by Dr. Braasch last year how often I performed a complete nephro-ureterectomy. It was in only 10 per cent. of the cases. The indications are definite, and it is very striking how quickly the patient improves following operation. The urine clears up and the patient does so much better than those in whom a long ureter is left, so that I am coming more and more to the opinion that, perhaps, we are leaving too much ureter in in many cases, allowing Nature to take care of that ureter—which she usually does, but she does it rather slowly. The strange thing in these cases is that the anterior incision regularly heals by primary union. There is never a tuberculous sinus in that wound. My opinion is that the fistulas that develop are due to one of two causes: either perirenal fat tuberculosis or, more likely, the traumatism of the operation; and that bacilli have been swept by the trauma of the operation into the blood stream and subsequently deposited in the musculature of the wound. The tuberculosis that develops is in the lumbar muscular and vascular wound, whereas no tuberculous fistulas develop in the anterior vascular wound which leads to the stump of the ureter. It is evident, therefore, that the term ureter fistulas in operated cases of renal tuberculosis is not appropriate.

Fig. 1.—Roentgenogram showing a bullet that penetrated the lung through the chest wall. Bullet removed from lung tissue by bronchoscopy through the mouth, under local anesthesia, in thirty-five minutes.

PROGNOSIS OF FOREIGN BODY IN THE LUNG*

CHEVALIER JACKSON, M.D.
PHILADELPHIA

All the textbooks on medicine and surgery consider the prognosis of foreign bodies in the lung on the basis of cases observed before the development of bronchoscopy. All the older textbooks stated, in effect, that, if the intruder were not expelled by cough, death usually resulted from phthisis pulmonalis. This statement was based on clinical observations made before the day when the bacillary nature of tuberculosis was known. In no case of foreign body in the Bronchoscopic Clinic have tubercle bacilli been found. That the prolonged sojourn of a foreign body, if unremoved, will give a complete clinical picture of pulmonary tuberculosis, even to hemoptysis or to fatal hemorrhage, is only too true, as elsewhere recorded.[1] We are here concerned only with prognosis. Prognostically, the essential difference is that patients with chills, fever, sweats, emaciation, clubbed fingers, copious and foul expectoration and hemoptysis due to advanced pulmonary tuberculosis usually die; whereas, patients with pulmonary sepsis due to the prolonged sojourn of a foreign body, and presenting identically the same symptoms, almost invariably recover perfect health after the bronchoscopic removal of the foreign body. The foreign body itself is the chief obstruction; its removal permits the free drainage and aeration necessary for recovery. For the foregoing reasons, a revision of the paragraphs on the prognosis of foreign bodies in the lungs, in our textbooks, is necessary. The records of the Bronchoscopic Clinic furnish clinical data as a basis for such a revision.

The subject of prognosis in cases of foreign bodies in the lungs naturally divides itself into two classes of cases: (1) those in which the foreign body is removed or expelled, and (2) those in which the intruder remains in the lungs. As more than 98 per cent. of the foreign bodies have been removed from the patients, my statistics are numerically deficient on the unremoved phases of the subject.

THE CHARACTER OF THE FOREIGN BODY

The character and properties, physical and chemical, of the foreign body constitute the most important fac-

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Jackson, Chevalier: Symptomatology and Diagnosis of Foreign Bodies in the Air and Food Passages, Am. J. M. Sc. 161:625 (May) 1921.

tor in the prognosis. The clinical data affording the pathologic basis for this and other phases of the subject have appeared in a previous publication [2] and will not be repeated here. As therein shown, both the rapidity and the extent of the pathologic condition are dependent on (*a*) the degree of the obstruction to drainage and aeration of the tributary lung tissue, and (*b*) the reaction the tissues manifest to the presence of the particular foreign body. These factors vary widely with the nature of the intruder. For instance, peanut kernels are very irritating, while metallic bodies cause little specific reaction; indeed, there is some basis for assuming that they give off germicidal agents that lessen suppurative activity. Next in importance, prognostically, is the physical character of the foreign body with reference to its power to cause trauma of the invaded bronchi. A very smooth, dense, insoluble, inorganic substance causes no trauma and little reaction for a long time, if, as before stated, drainage and aeration are not interfered with. On the other hand, a sharp, ragged fragment of such form as to cause continual trauma may be followed by such serious consequences as to make the prognosis grave, if the intruder be not removed within a few weeks.

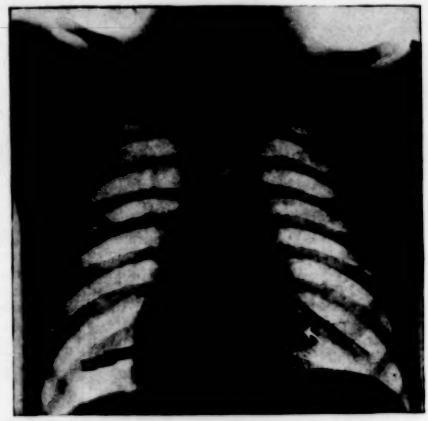


Fig. 2.—The leading bronchi of the lower lobe bronchi mapped in two planes with bronchoscopically insufflated bismuth subnitrate, showing the location and amount of intervening pulmonary tissue that would have to be traversed to reach the bullet. The stereoroentgenograms by Dr. Manges of the bismuth-dusted bronchi showed the bronchial tree of this lobe in accurate relation to the bullet.

PROGNOSIS IN CASES OF PENETRATING PROJECTILES IN THE LUNG

The general surgical phases of this subject are not within the scope of this paper. In the only case that has come to the Bronchoscopic Clinic, the projectile, a bullet, was removed by bronchoscopy through the mouth in thirty-five minutes, under local anesthesia, without hemorrhage and without any reaction, the patient being discharged as well the third day after operation.

REPORT OF CASE

History.—A boy (Case Fbdy. 876), aged 17, was referred to the Bronchoscopic Clinic by Dr. Frederick Heyer for the removal of a 0.22 caliber bullet in the right lung. Fifteen months before admission, the patient had been shot in the back, the wound of entrance being between the seventh and eighth right ribs, 8 cm. to the right of the spine. Profuse hemorrhage had followed the penetration of the bullet, but it ceased under rest in bed. The patient was in the state hospital at Nanticoke for two weeks; since his discharge from there, the only symptom had been pain in the left chest.

Examination.—On admission to the Bronchoscopic Clinic, Dr. Thomas McCrae reported negatively on physical signs of a pathologic condition secondary to a foreign body. A stereoroentgenographic study by Dr. Willis F. Manges showed that the bullet had lodged in the pulmonary tissue, not in a bronchus (Fig. 1), there being evidences of only slight pathologic changes in the region of the bullet.

Preliminary Procedure.—Dr. J. Chalmers DaCosta, who saw the patient with me, expressed the opinion that thoracotomy was not justifiable in view of the absence of abscess formation. I had no doubt as to the feasibility of peroral bronchoscopic removal; the only question was as to the hemorrhagic risks. To determine this point, it was necessary to know the location and extent of the pulmonary and, so far as possible, the vascular tissue intervening between the bullet and the nearest bronchoscopically available bronchus. This was accomplished by three procedures: 1. The bronchi in the neighborhood were "mapped" in two planes (Fig. 2) by my method of lung-mapping.[3] 2. The bronchoscope was introduced through the mouth under local anesthesia, and roentgenograms (Fig. 3) were taken in two planes with forceps in a subsequently findable position in the branch bronchus nearest the bullet. 3. In consultation with Dr. J. P. Schaeffer on a transversely sectioned thorax (Fig. 4), it was determined that the very large vessels were grouped in a roughly crescentic arrangement posteriorly around the nearest available bronchus, whereas in the direction of the bullet, anteriorly and slightly externally, there were no large vessels. It was therefore decided that bronchoscopy was justifiable, provided I could limit the peroral instrumental invasion to the zone of relative safety, anteriorly and outwardly from the nearest branch bronchus. This I felt sure that I could do. Provisions for hemostasis were three: 1. I asked Dr. Elmer H. Funk to be present with his equipment for the arrest of tuberculous pulmonary hemorrhage in readiness for collapsing the lung, which it was decided would be efficient in spite of the one pleural adhesion at the site of the wound of entrance. 2. Tampon tapes (Fig. 5) were provided for bronchoscopically packing the lower lobe bronchus. Mechanically, bronchial tamponade is quite feasible, respiration from the middle and upper lobes and the other lung being uninterfered with. 3. I planned at the preliminary bronchoscopy to pinch with forceps the tissues to be traversed at the subsequent bronchoscopic removal. By this means, I expected to obtain clotting and obliteration of the smaller vessels. The bloodlessness of the subsequent removal proved this last measure alone so efficient that the other two were not required. Had large vessels intervened, probably the obliterative pinching would not have been so successful.

Bronchoscopic Removal.—Applying a little 10 per cent. cocain solution, I passed the bronchoscope through the mouth into the right inferior lobe bronchus to a distance of 2 cm. below the orifice of the middle lobe bronchus. The forceps were then inserted into the branch nearest the bullet. Dr. Willis F. Manges, with his double-plane fluoroscope, giving me directions, I reached the bullet, detached it from the fibrous tissue, and removed it, along with the bronchoscope, through the mouth. There was no bleeding more than a streaking of the expectorated mucus. The time of bronchoscopy was thirty-five minutes.

2. Jackson, Chevalier: Observations on the Pathology of Foreign Bodies in the Air and Food Passages, Surg., Gynec. & Obst. **28**: 201 (March) 1919.

3. Jackson, Chevalier: The Bronchial Tree, Its Study by Insufflation of Opaque Substances in the Living, Am. J. Roentgenol. **5**: 454 (Oct.) 1918; Proc. Am. Laryngol., Rhinol. & Otol. Soc., 1918.

Progress.—The temperature, pulse and respirations did not go above normal (Fig. 6). The patient was out of bed the next day and walked to the roentgen-ray room for a final roentgenogram. On the third day, there being no cough, no expectoration, and no abnormal physical signs, the patient dressed and left for his home, unaccompanied. Subsequent reports showed that he remained free from symptoms. He is now, two months after operation, putting in full time at his work as a coal miner.

COMMENT

In view of this case, I think the prognosis in cases of penetrating foreign body in the lung must be revised. True, it is but one case; but the facility with

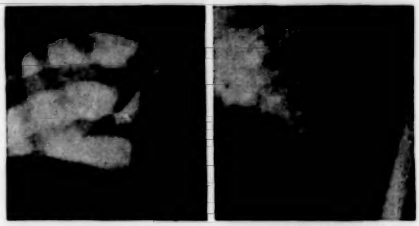


Fig. 3.—Roentgenograms in two planes, coronal and sagittal, with forceps in a subsequently findable position in the branch bronchus nearest the bullet. The intervening space showed the extent and position of the lung tissue to be penetrated to rereach the bullet. Plates made by Willis F. Manges.

which the bullet was extracted, and the absence of bleeding and reaction, all warrant a more favorable prognosis than is possible under the general surgical rule to wait for pulmonary abscess, a condition that, whatever its cause, is always of grave prognosis. The prognosis of peroral bronchoscopic removal is certainly much less serious than thoracotomy, either with or without waiting for abscess formation. Therefore, the removal is indicated in many cases in which, as in this case, the conscientious surgeon would consider thoracotomy unwarranted. Projectiles in the lung are much more likely to give rise to suppuration than those in other tissues, because of the probability of air-borne infection reaching them through one of the thousands of tiny bronchi. Obviously, the limitation of the method is the size of the foreign body. As has been pointed out,[4] it is probably impossible to bring up through the main bronchi any penetrating foreign body that is larger in its least dimension than the diameter of the main bronchus of the invaded lung. There is no limit as to the length of the foreign body, because the long axis can be brought to correspond with the long axis of the bronchus, as is frequently being done in cases of aspirated foreign body; for instance, in my collection there are nails and pins up to 3 inches in length. In my opinion, there is no need of waiting for years under a constant menace of pulmonary abscess, and under the depressing stigma of rejection by life insurance companies, nor of taking the risk of thoracotomy in cases of penetrating projectiles not of very large size.

In passing, it may be mentioned that experience in the bronchoscopic removal of aspirated foreign bodies of long sojourn warrants the statement that, had the bullet been surrounded by an abscess secondary to its presence, the removal would have been relatively very easy. In reporting this case, my only regret is that it may lead to reckless, probably fatal, and quite unnecessary penetration of lung tissue for aspirated foreign bodies, because the successful outcome may throw some one off his guard. It cannot be too strongly emphasized that while endoscopy of the bronchi is perfectly safe when carefully done, an enormous element of risk arises as soon as a bronchial wall is broken through. It is only in certain locations that the wall may be penetrated without unjustifiable risks, and these locations cannot be broadly indicated. Each case of penetrating projectile must be studied separately, the projectile located with reference to the nearest bronchoscopically available bronchus by lung mapping, and the probabilities of the hemorrhagic risks determined. Even if there is little probability of hemorrhage, proper provision for collapsing the lung and for bronchial tamponade must be made beforehand. As to bronchoscopic penetration of the bronchial wall in case of an aspirated foreign body, it is not only dangerous but entirely unnecessary. Any foreign body that has gone down the natural passages can be brought up the same way without traumatizing the bronchial wall.

Prognosis in cases of spontaneously expelled foreign bodies is good; in practically all such cases, the patients have recovered. This riddance of the foreign body is, however, so rare (about 2 per cent.) that it is not to be waited for in any given case.

As to the prognosis of thoracotomy for foreign body in the lung, Powers[5] states that "pneumobronchotomy for the removal of foreign bodies . . . is an operation of marked severity and one which has generally resulted fatally." He could find no record of a successful case. Lord,[6] referring to aspirated foreign bodies, stated that "if bronchoscopy fails, such other procedure as intrathoracic tracheotomy, bronchotomy by way of the posterior mediastinum, or pneumobron-

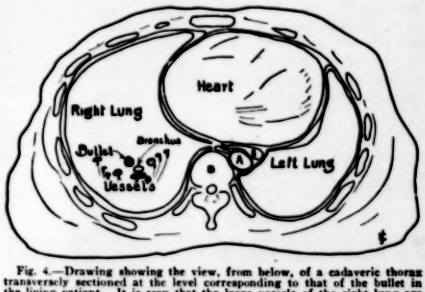


Fig. 4.—Drawing showing the view, from below, of a cadaveric thorax transversely sectioned at the level corresponding to that of the bullet in the living patient. It is seen that the large vessels of the right lung are all posterior to the line through the tissues to be traversed in the bronchoscopic removal of the bullet. A very large vessel is seen close to the bronchus posteriorly; but there are no large vessels anteriorly and outwardly. Cadaveric section made by Dr. J. P. Schaeffer.

chotomy . . . may be considered, but as yet have only rarely proved successful." The attitude of most surgeons is to wait for abscess formation before advising thoracotomy. Statistics limited to thoracotomy for pulmonary abscess resulting from foreign body are not obtainable; but Lord reports three deaths following

4. Keen's Surgery, Philadelphia, W. B. Saunders Company, 3: 322, 1921.

5. Powers, in Ochsner, A. J.: Surgical Diagnosis and Treatment, Philadelphia, Lea & Febiger, 1920, p. 279.

6. Lord, F. T.: Diseases of the Bronchi, Lungs and Pleura, Philadelphia, Lea & Febiger, 1915, p. 38.

V. 192

operation (60 per cent.), one case cured and one unrelieved after repeated operations, in a series of five cases of chronic pulmonary abscess at the Massachusetts General Hospital.

CONCLUSIONS

1. The prognosis of unremoved foreign body in the lung is grave.

2. About 2 per cent. of foreign bodies are coughed up, and in these cases the prognosis is good; but this fortunate termination is too rare to justify waiting, in view of the fact that bronchoscopy is 98 per cent. successful. As between thoracotomy and waiting for spontaneous expulsion that may never happen, the prognosis of the latter course is less serious.

3. The prognosis of thoracotomy for removal of aspirated foreign bodies, so far as can be determined, is extremely grave. For penetrating foreign bodies, it is so grave as to be inadvisable unless suppuration has intervened.

4. The prognosis as to bronchoscopic removal of aspirated foreign bodies is very good (98 per cent. removals). It may be said that almost any localizable foreign body that has gone down the natural passages can be brought up the same way. The prognosis as to recovery after removal is excellent (98.3 per cent. recoveries). Of forty-four cases complicated by abscess or bronchiectasis, in forty-two (94.4 per cent.) the patients recovered good health. The risks of a very brief and careful bronchoscopy without general anesthesia are almost nil.

Fig. 5.—Tampon-tapes for bronchoscopic hemostasis, prepared for the bronchoscopic packing of the lower lobe bronchus in case of hemorrhage; which, however, was avoided by other means. The folded gauze is 10 cm. long; the braided silk cord, 60 cm. long.

5. The prognosis in case of a penetrating foreign body removed from the lung by bronchoscopy through the mouth, based on the only case so far thus dealt with, is good. The patient had no hemorrhage, no rise of temperature, was discharged cured three days after the bronchoscopy, and is still in perfect health. A large series of cases will be required to determine the prognosis. The method is necessarily limited to foreign bodies whose smallest diameter is less than that of the main bronchus of the invaded lung. It can be considered justifiable only after careful localization studies by lung-mapping in the particular case; otherwise fatal hemorrhage may be encountered.

128 South Tenth Street.

ABSTRACT OF DISCUSSION

DR. HENRY L. LYNAH, New York: In regard to prognosis of foreign bodies in the lung, it is good in the case of metallic foreign bodies, but not so good in food foreign bodies. Often when the foreign body is successfully extracted, edema of the bronchus may continue and cause ballooning of the lung, and the patient succumbs later. The localization procedure which Dr. Jackson illustrated is excellent. But when there is excessive secretion, as in lung abscess cases, with which I have been dealing so extensively, the bismuth powder is washed out immediately by the thick secretion, whereas we may secure better localization in these cases by the injection of the bismuth and olive oil mixture. Pneumothorax is an interesting and important point. As Dr. Jackson demonstrated in the bullet case, you can enter lung structure provided you rupture the lung well down toward the diaphragm. This is not the same as when you rupture at the hilum. Rupture in this locality may cause bilateral pneumothorax and instant death. However, if the lung is ruptured at a lower level, the leak is slow and the patient will recover.

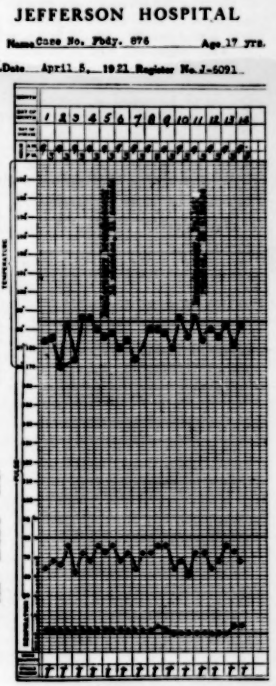


Fig. 6.—Temperature chart of patient from whose lung tissue a penetrating bullet was removed through the mouth by bronchoscopy under local anesthesia.

DR. D. CROSBY GREENE, Boston: In considering the prognosis in cases of recovered foreign bodies from the lung, and especially the conclusions reached by Dr. Jackson, those of us who are more or less laymen in this branch are possibly not sufficiently impressed with the importance of the element of technic. It is a common error for an inexperienced operator to go ahead on the basis of such results as Dr. Jackson has obtained and expect to get similar results without the same technic. The excellence of Dr. Jackson's results is due to the fact that he does not traumatize his patients. I can do bronchoscopy with less trauma under general than under local anesthesia. The question of a general anesthetic is one in regard to which differences of opinion are admissible, and I take exception to Dr. Jackson's dogmatic assertions on this point. For the last two years nearly all my general anesthesias in these cases have been by rectum, and I am positive that in children I can perform bronchoscopy with less trauma in this way than under local anesthesia. Another equally important point which Dr. Jackson has so often brought out is the time limit for operating in these cases. When hunting for a foreign body the temptation is to keep on until you get it, and that has been a cause of disaster in many cases.

Fig. 7.—Bullet that penetrated the chest wall and was removed through the mouth by bronchoscopy under local anesthesia.

DR. ROY P. SCHOLZ, St. Louis: A girl, aged 9, inspired a nail 1 inch in length with a large head. Little attention was given this fact for about three years. When the child's health began to fail, she was treated for pulmonary tuberculosis, even being kept in a tuberculosis sanatorium for

a year. For a time she went without treatment. The roentgen ray revealed a nail in the left fifth intercostal space, lying more or less horizontally. It was supposed that the foreign body was in the right bronchus. Both bronchi were explored and found free from a foreign body. With the bronchoscope in place, a fluoroscopic examination was made. The nail was found to be an inch above the tip of the instrument. The child withstood this manipulation fairly well, although the following night she had a terrific coughing spell, followed by very marked dyspnea and expectoration of a large quantity of thick yellow and offensive pus. A physical examination failed to reveal a definite abscess cavity. Not until after the abscess apparently emptied itself and the plate had been restudied was an indistinct triangular area noted, extending from the nail upward along the vertebral column to the apex of the lung. Another roentgenogram showed that the nail had definitely changed position. It was decided that this nail must be in a cavity of greater lumen than a subbronchus, and that it was lodged in the outlet of an abscess cavity, acting as a ball valve. It was decided to perform another bronchoscopy, and pass an iron staff into the left bronchus, getting as close to the nail as possible, and then use Luedde's giant magnet. The child was slowly led up to the magnet for the purpose of seeing what symptoms would be produced by being brought within the magnet's radius. No symptoms were produced. The bronchoscope was passed and through this the iron staff was introduced with the aid of the fluoroscope. The magnet seemed to have no influence on the nail. At last reports the nail was still in place.

DR. CHEVALIER JACKSON, Philadelphia: I was pleased to have Dr. Greene corroborate the importance of avoidance of trauma in bronchoscopy. I try to do all my traumatization on a rubber tube manikin on which I preliminarily study the particular problem involved. When I get ready to work on the patient I know how to avoid trauma. I think that perhaps Dr. Greene misconstrued my attitude on the subject of general anesthesia. I have always advocated that each operator ought to do whatever he thinks is best for his patient. I prefer an anesthetic in children and local anesthesia in adults. Others should follow their personal preference, except in case of dyspnea, in which general anesthesia is very dangerous. Direct laryngoscopy for diagnosis in children must be done without anesthesia, general or local. Dr. Scholz raises the question of the use of the magnet in a case of a nail in the lung. I do not like to discourage any one from experimenting with magnets. It is a law in physics that the attraction of the magnet for the armature is no greater than that of the armature for the magnet. Therefore, if the foreign body is small, no matter how large the magnet may be, the pull is weak. If the foreign body contained as much iron as an operating table and it were possible for it to be in the lung, it could be pulled out through the chest wall by a magnet. All large foreign bodies in the larger bronchi are easily and quickly removed by peroral bronchoscopy. The only case in which a magnet would be desirable is that of a tiny foreign body in a tiny bronchus. In these cases a magnet is useless.

Clinical Notes, Suggestions, and New Instruments

AN INSTANTANEOUS BRILLIANT ILLUMINATOR FOR SURGEONS

JOHN HINCKLEY MORSE, A.B., M.D., MINNEAPOLIS

Often during an operation the surgeon needs a brilliant illumination for a deep wound. We have all felt the inadequacy of the apparatus furnished us by our hospitals. Some years ago I got from Dr. M. Russell Wilcox of Minneapolis the idea of an overhead lamp, from which the perfected model, as illustrated, has grown.

It is the purpose of this light to be overhead and clear of all attendants, yet within easy reach of the surgeon, his assistant or a nurse. By means of a specially designed handle about which is a sterile towel, the operator may reach the lamp and place it instantly anywhere in midair. This eliminates an extra attendant coming into the field of operation, and does away with risk of contamination, etc.

Brilliant and instantly adjusted illuminator.

The main bracket is bolted securely to a white enameled panel. It is cast in solid aluminum, and buffed. Wires are concealed in the casting. The extreme length of the horizontal arm may be varied according to need. It swings horizontally within an angle of 180 degrees to any point within the length of the radius, and by a specially designed hinged joint, the vertical position is obtained at any level. No adjustments are necessary. The handle is grasped by the operator, the lamp is moved to the position desired, released, and it stays in position. The bell shade is particularly designed for diagnostic and operative work of eye, ear, nose and throat men. The illumination is projected downward, for table operations, and laterally through different sized apertures for nasal operations, ophthalmoscopy, retinoscopy and otoscopy. In case the shade is not needed it may be instantly raised on the vertical rod to any position higher up. When the lateral projection is being used, the base of the bell is covered. Only one lateral aperture is open at a time. These openings measure 3 inches, 1 inch, and one-half inch, respectively. A revolving outer sleeve on the bell with handle attached allows the diagnostician to pick quickly the desired aperture.

This light fulfils all of the wants for which it has been constructed, namely, it is instantly ready, always works, is noncontaminating, eliminates an extra attendant, gives brilliant illumination where it is needed, cannot get out of order and does not wear out.

503 Donaldson Building.

A Suggestion Regarding the Stethoscope.—DR. ELLIOTT C. PRENTISS, El Paso, Texas, writes: Frequently in examining the heart or chest the rubber tubes touch each other and interfere with the sounds heard. This may be overcome by tying a rather long safety pin between the rubber tubes at the middle, thus holding the tubes apart. Another one may be tied nearer the bell or phonendoscope.

INTERNAL NOSE MODEL

W. A. FISHER, M.D., CHICAGO

It is difficult to teach nasal surgery without a good understanding of the anatomy, and the subject is not an easy one to teach from drawings.

Wet specimens are ideal for teaching, but they are not readily obtained.

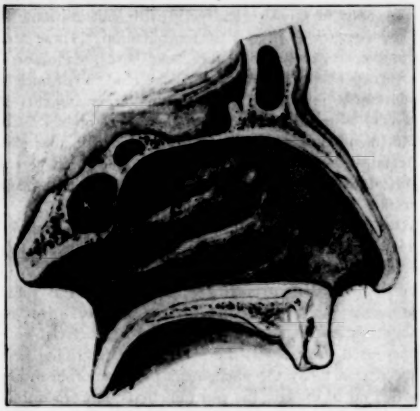


Fig. 1.—Model "A": *a*, superior turbinate; *b*, agger nasi; *c*, depression above *c*, superior meatus; *d*, middle turbinate; *e*, depression above *e*, middle meatus; *f*, inferior turbinate; *g*, depression above *g*, inferior meatus; *h*, frontal sinus; *i*, ethmoidal cell; *j*, eustachian orifice; *k*, sphenoidal sinus.

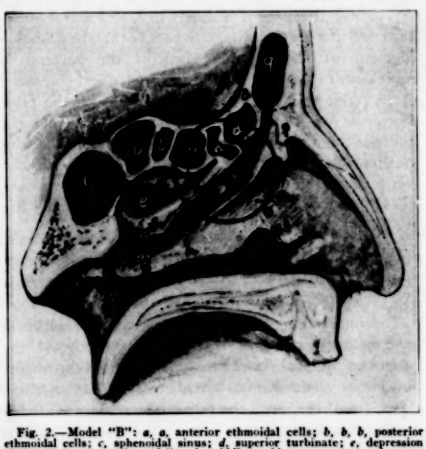


Fig. 2.—Model "B": *a*, *a*, anterior ethmoidal cells; *b*, *b*, *b*, posterior ethmoidal cells; *c*, sphenoidal sinus; *d*, superior turbinate; *e*, depression above *e*, recessus sphenoidalis; *f*, middle turbinate; *g*, space above *g*, middle meatus; *h*, inferior turbinate; *i*, inferior meatus; *j*, lacrimal duct; *k*, depression below *k*, maxillary ostium; *l*, bulla ethmoidalis; *m*, opening posterior to *m*, ostium of bulla ethmoidalis; *n*, depression below *n*, hiatus semilunaris; *o*, ring vicous circle; *p*, depression posterior to *p*, frontonasal duct; *q*, frontal sinus; *r*, eustachian orifice; *s*, ridge posterior to *s*, processus uncinatus.

The models are suggested to replace wet specimens and can be used for study with any text on the subject. They are made of rubber, natural in size, practically indestructible, not unsightly, and can be used for study in the physician's office or for demonstration in the operating room.

For the general practitioner and rhinologist, the model is suggested as an aid in diagnosis and treating focal infections of nasal origin, as well as laying the foundation for nasal surgery.

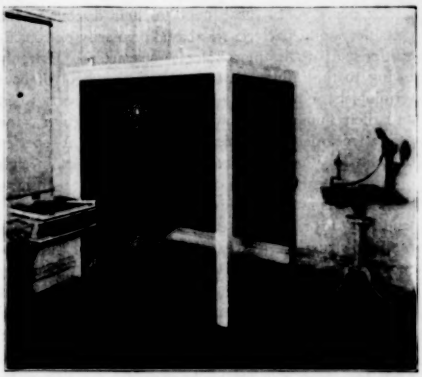
31 North State Street.

AN EFFECTIVE DARK ROOM

SIDNEY L. OLSHO, M.D., PHILADELPHIA

The accompanying illustration shows an easily constructed dark room. The roof is compo or bristol board painted dead black. The shades are heavy, opaque, black cambric on steel rollers.

The room should be at least 5 by 6 feet. If it is placed favorably, history taking, ophthalmology, retinoscopy, refraction and transillumination can be done without moving the patient. One's office space seems not to be diminished. Disturbing side and rear reflections are under control. Darkness is restricted to the treatment area.



Easily constructed dark room.

If necessary, three or all four walls may be roller shades. The structure may readily be adapted for otolaryngology.

235 South Fifteenth Street.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

CALCIUM CASEINATE (See THE JOURNAL A. M. A., Sept. 24, 1921, p. 1023).

Protolac.—A brand of calcium caseinate, N. N. R.

Manufactured by the Dry Milk Company, New York. No U. S. patent. U. S. trademark No. 145077.

BENZYL SUCCINATE (See THE JOURNAL A. M. A., Sept. 24, 1921, p. 1023).

Benzyl Succinate-Seydel.—A brand of benzyl succinate, N. N. R.

Manufactured by the Seydel Manufacturing Co., Jersey City, N. J. No U. S. patent or trademark.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 8, 1921

PLEOMORPHISM AMONG BACTERIA

For many years subsequent to their discovery, the classification of bacteria was based primarily on considerations of their morphologic characters. Largely owing to the influence of the German school of bacteriologists, notably Ferdinand Cohn, Robert Köch and their pupils, constancy of form and action came to be regarded as typical of the different species described. Variability was accepted as a certain sign of difference in species or genera. With the prevalence of this monomorphistic view and the consequent tendency to recognize even small departures from familiar structural standards as evidences of the presence of new forms, it is evident why the tendency to multiply the number of bacterial categories on the basis of morphologic variations has increased until at length considerable criticism has been leveled against this "reckless species making." Until recently there were few American textbooks that did not adhere to the rigid monomorphism that had been taught in Germany.

Latterly, however, there has come a growing recognition that a species of bacteria may exhibit morphologic variations, the changes in form being associated frequently with alterations in the cultural conditions or, as has further been suggested, representing different stages of a life cycle. Micro-organisms may change their physiologic properties quite readily with altered environment, and the new variety may retain the acquired peculiarities for some time even if brought back to the original conditions. Scientific study has been directed of late more to the physiologic than to the morphologic problems of bacteriology; but the subject of pleomorphism is at length attracting renewed consideration. In his elaborate monograph on the life cycles of the bacteria, Löhnis [1] insists that all well studied species have shown themselves to be able to grow in various round, straight and curved, small and large, regular and irregular cell forms. Budding, branching and apical growth are common with all bacteria.

Contrary to the monomorphistic theory, which knows only of one constant type of vegetative cell for every species, and of not more than one type of reproductive organ, the endospore, for merely one group of bacteria, Löhnis defends the thesis, now supported by numerous independent investigations, that in reality all bacteria are not only distinctly pleomorphous in their vegetative growth, but also able to produce various organs of reproduction. These are: gonidia, regenerative bodies, exospores, endospores, arthrospores and microcysts. All are made up of nuclear substances, reinforced by smaller or larger amounts of reserve material and protected by a more or less resistant membrane. Gonidia and regenerative bodies participate actively in the process of multiplication, whereas the other reproductive organs are in the first place resting forms. Gonidia, regenerative bodies and probably microcysts, too, are produced by all bacteria, while arthrospores, exospores and endospores are less common; though there are indications that they will be discovered in many more cases, as soon as these problems are more thoroughly investigated. Just as slight variations in the morphology of bacteria were once used unwisely as the pretext for describing new species, so today the phenomena of pleomorphism are called on to explain the contradictions between different investigators in the search for the pathogenic etiologic agencies in certain as yet unexplained diseases. It may at times be as foolish to appeal to undemonstrated variations as it has been incorrect to deny variability. Perhaps it is timely to assert with Löhnis, however, that it is a mistake to believe that the acknowledgment of the pleomorphism of the bacteria is equivalent to a negation of the existence and constancy of bacterial species. Just as all studies on the pleomorphism of the fungi, algae and protozoa did not minimize, but have increased the accuracy in distinguishing between the various genera and species, he concludes, so also systematic bacteriology will win considerably by every thorough investigation on the life cycles of the different species.

1. Löhnis, F.: Studies upon the Life Cycles of the Bacteria, Memoirs National Acad. Sc. **16**, Second Memoir, 1921.

POSSIBLE NEW LIGHT ON THE NATURE OF EXOPHTHALMIC GOITER

The interesting symposium on basal metabolism, a noteworthy feature of the Boston meeting of the American Medical Association,[1] emphasized the important but as yet inadequately realized fact that sustained elevations of the metabolic rate are by no means always attributable to a common cause. As Boothby pointed out, until recently adenoma with hyperthyroidism has been confused with exophthalmic goiter, which is

1. Plummer, H. S.: Interrelationship of Function of the Thyroid Gland, J. A. M. A. **77**: 244 (July 23) 1921. Benedict, F. G.: The Measurement and Standards of Basal Metabolism, p. 247. Lusk, Graham: Fundamental Ideas Regarding Basal Metabolism, p. 250. Boothby, W. M.: The Basal Metabolic Rate in Hyperthyroidism, p. 252. Means, J. H.: Determination of the Basal Metabolism, ibid. **77**: 347 (July 30) 1921. Du Bois, E. F.: The Basal Metabolism in Fever, p. 352.

another pathologic condition of the thyroid gland, consisting of diffuse parenchymatous hypertrophy, symmetrically involving the entire gland. Clinically, exophthalmic goiter, like adenoma with hyperthyroidism, is characterized by an increased basal metabolic rate and, therefore, the two diseases have in common the symptoms due to the increased rate. However, exophthalmic goiter has a different clinical course from adenoma with hyperthyroidism, and, in addition, certain peculiar and characteristic symptoms, one or more of which are present in varying degrees, such as exophthalmos, thrills and bruit, tendency to gastrointestinal crises, and a peculiar type of nervousness. That we are dealing with two entirely distinct diseases in exophthalmic goiter and in adenoma with hyperthyroidism has been proved beyond reasonable doubt by Plummer,[2] who pointed to the difference in the mode of onset of the two diseases, the clinical course and duration of the symptoms, the physical findings, and, finally, the difference in the pathologic conditions of the thyroid gland.

The Mayo Clinic school at present inclines to the possibility that exophthalmic goiter, the status of which cannot be accounted for by a pure hyperthyroidism, may be associated with some abnormality in the chemical structure of thyroxin, the effective hormone of the thyroid, which has been described as "an agent hastening the rate of formation of a quantum of potential energy available for transformation on excitation of the cell." This suggestion can scarcely yet be regarded as having acquired the dignity of a defensible hypothesis; at any rate, the prominence of its sponsors should not be permitted to overshadow the possibilities of other explanations of the genesis of exophthalmic goiter. Marine and Baumann[3] of the Montefiore Hospital, New York, have recently shown that removing or crippling (by freezing) the suprarenal glands in rabbits causes a disturbance in metabolism, usually characterized by increased heat production and carbon dioxid output. This disturbance appears definitely related to the completeness of removal of the cortical function. The experimenters add, furthermore, that there are many points of similarity between the syndrome that results from such suprarenal injury in rabbits and exophthalmic goiter in man.

The once attractive hypothesis of the indispensable functioning of the suprarenal glands through the intermediation of the hormone epinephrin has been combated in previous issues of THE JOURNAL. It is worth noting here that whereas this potent chemical compound is found in the medulla of the gland, it is in reality the cortical layers of the suprarenal structures that represent the portions essential to survival of the organism. Evidently, too, the cortex is more intimately related to increase in heat production, when this occurs in the body, than is the suprarenal medulla. Although Marine and Baumann disclaim that they have reached conclusions regarding the mechanism of the rise in the metabolic rate following suprarenal injury, their "working hypothesis" is not without interest to students of endocrinology. Supposing the intact thyroid gland to be the major factor in the maintenance of a given metabolic rate and that this function is controlled by some regulatory mechanism, they have argued that possibly this control might be exercised by a restraining influence, a major factor in which was the normal function of the suprarenal glands. If such should be the case, they add, the removal or crippling of this restraining or inhibitory influence would allow the thyroid to increase its activity. The frequency with which thyroid and thymus hypertrophy occurs after suprarenalectomy in animals is additional evidence of the possibility of increased thyroid activity. This is not the first time that a regulatory function has been assigned to the suprarenal glands. It will be interesting to learn further analogies between experimental conditions developed by suprarenal damage and exophthalmic goiter in man, publication of which has been promised.

2. Plummer, H. S.: The Clinical and Pathologic Relationship of Simple and Exophthalmic Goiter, Am. J. M. Sc. 146:790, 1913.

3. Marine, David, and Baumann, E. J.: Influence of Glands with Internal Secretion on the Respiratory Exchange; II, Effect of Suprarenal Insufficiency (by Removal or by Freezing) in Rabbits, Am. J. Physiol. 57:135 (Aug.) 1921.

THE SPIRIT OF REVOLT

Psychologists today are more concerned with the changing spirit of mankind than with any other psychologic problem. The literature on the spirit of revolt, of restlessness, of lawlessness and of radicalism is daily becoming greater. The subject is engaging the attention of our greatest minds. Thus, James M. Beck,[1] Solicitor-General of the United States, devoted the presidential address before the annual meeting of the American Bar Association, held recently at Cincinnati, to this subject. There is throughout the world today, he pointed out, a revolt against the spirit of authority. Pending criminal indictments in federal courts have increased from 10,000 in 1912 to more than 70,000 in 1921. The losses from burglaries repaid by casualty companies have grown in amount from $886,000 in 1914 to over $10,000,000 in 1920. The streets of our cities are as unsafe as were the country roads in the days of Dick Turpin and Jack Sheppard, and murder, the most serious of all crimes, is so frequent as to excite hardly passing attention. In New York, according to Mr. Beck, there were, in 1917, 236 murders with only sixty-seven convictions and, in 1912, 221 murders and seventy-seven convictions; and in Chicago, in 1919, there were 336 murders and only forty-four convictions. If these factors so near home arouse pessimism, how much more serious is the world-wide prevalence of political revolts, enormous uprisings against constituted authority in numerous countries,

1. Beck, J. M.: The Spirit of Lawlessness, American Bar Association Journal 7:441 (Sept.) 1921.

strikes involving hundreds of thousands of men, and vast fortunes wasted in the pursuit of pleasure. In searching for the cause of the situation, Mr. Beck traces it not only to the rise of individualism which began in the eighteenth century and which had steadily grown with the advance of democratic institutions, but also to the prodigious development in invention and mechanical aids to human achievement so that everything points to quantity of production rather than quality. Man has become a tender of machines rather than a constructive thinker. The increase in potential of human power has not been accompanied by a corresponding increase in the potential of human character.

Quite similar is the analysis of the psychology of the radical presented by the well known psychologist, Stewart Paton.[2] In a recent consideration of the subject he states his thesis: "Although a large part of the world since 1914 has shown signs of insanity, so far as we know, the signs of sanity and the methods available for promoting sound thinking and acting have not been discussed by any peace commission or conference, organized with the express purpose of assisting to restore peace and sanity throughout the world." Dr. Paton argues that we are returning to an archaic form of cerebration in endeavoring to arrive at decisions on the great questions of our civilization. Radicals are advocating methods of government that are the expressions of primitive emotional and mental processes. Such habits of thought prevent the advantageous utilization of brain power acquired after millions of years of evolution. Prejudices, fixed ideas, suspiciousness, sentimentality and outbursts of passion are making more difficult the task of establishing law and order. To Dr. Paton, the remedy seems to lie in recognizing what constitutes sanity, and in diverting attention from hair splitting arguments to the improvement of mental processes. We must cultivate emotional and mental dispositions favorable for rational adjustment of social difficulties. In simple words, it is more important for human progress how a man thinks than what he thinks.

These are the views of an eminent lawyer and an eminent psychologist as to what's wrong with the times. Men are engaged in a mad race, but they know not whither. The craze for speed dominates everything, speed in transportation, speed in thinking, speed in living and, as revealed in the war, speed in killing. As pointed out by Le Bon,[3] author of the most important discussion of the psychology of the crowd, mob spirit governs and the urge is uncontrolled. Whether human protoplasm and the sensitive cells of the human brain will be competent to withstand the strain is a serious question. The simple life has lost its fascination for the mob but not for the thinking human individual; the latter looks vainly about and wonders where he can find it.

2. Paton, Stewart: The Psychology of the Radical, Yale Review **11**: 89 (Oct.) 1921.

3. Le Bon, Gustave: The World in Revolt, New York, the Macmillan Company, 1921.

CARBON MONOXID POISONING IN CLOSED GARAGES

With the onset of cold weather comes the open season for fatalities resulting from carbon monoxid poisoning by inhalation of the exhaust gas of automobile engines running in small, closed garages.[1] The last few years have seen a gradual increase in deaths resulting from this peculiar combination of circumstances. Cases have been reported which involve inhalation of gas from bath room heaters as well as from both gasoline launches and automobile engines.[2] In fact, cases have even been reported in which the matter of ventilation had been given some attention but not sufficient to prevent fatalities.

The gas responsible, carbon monoxid, is one which quickly overcomes persons exposed to it above certain concentrations, so that it has been important to determine the limits necessary to cause fatality. In an endeavor to determine this necessary concentration and exposure, Prof. Yandell Henderson,[3] with the aid of a number of colleagues, carried on some studies preliminary to the problems of ventilation involved in the proposed vehicular tunnel under the Hudson River. It appears that, when a man begins breathing in a low concentration of carbon monoxid mixed with air, absorption occurs at the rate of 1 per cent. every ten minutes per part of carbon monoxid in the air; but if the exposure is prolonged, carbon monoxid merely displaces oxygen from the blood up to a point of equilibrium, depending on the relative amounts of carbon monoxid and oxygen in the air breathed, and on the intensity of the affinities of the two gases for hemoglobin. Carbon monoxid, it has been shown, is attracted by hemoglobin 300 times as strongly as is oxygen. With these factors as a basis, the investigators worked out a formula which indicated that a man breathing ten parts of carbon monoxid would inhale enough of the gas to become 66.6 per cent. saturated in 66.6 minutes. But since the more carbon monoxid the blood contains, the greater becomes the tendency with which this gas tends to diffuse out again into the air, a complete blood equilibrium would not be attained without the passing of many hours. The practical application of this is that the time for attainment of half equilibrium for persons sitting at rest and breathing concentrations of carbon monoxid up to seven parts is never considerably less than one hour.

Among other conclusions reached by the experimenters, the most important was the determination that, when the time of exposure in hours multiplied by the concentration of carbon monoxid in parts per

1. Carbon Monoxid Poisoning in Closed Garages, Pub. Health Rep. **36**: 2215 (Sept. 9) 1921.

2. Briggs, J. E.: Gangrene Following Carbon Monoxid Poisoning, J. A. M. A. **73**: 678 (Aug. 30) 1919. Darling, H. C. R.: Carbon Monoxid Poisoning from Bath Heater, M. J. Australia **2**: 181 (Aug. 31) 1918.

3. Henderson, Yandell; Haggard, H. W.; Teague, M. C.; Prince, A. L., and Wunderlich, Ruth M.: Physiological Effects of Automobile Exhaust Gas and Standards of Ventilation for Brief Exposures, J. Indust. Hyg. **3**: 79 (July), 137 (Aug.) 1921.

10,000 of air equals three, there is no perceptible physiologic effect. When it equals six, there is a just perceptible effect; when it equals nine, headache and nausea are induced; when it equals fifteen or more, the conditions are dangerous to life. If a motor car should give off one cubic foot of carbon monoxid per minute in a closed room 10 by 10 by 20 feet, the atmosphere would reach the dangerous concentration of fifteen parts in 10,000 in three minutes.

Experience has shown that the running of a motor car in a closed garage for testing or warming up is a dangerous procedure. Scientific evidence reveals the reason for the danger and the narrow limits of safety surrounding the inexperienced motorist who indulges in this hazardous performance.

Current Comment

MORE BOTULISM

The classic source of botulism is sausage; hence the name "botulism," from the term "botulus," a sausage. The first epidemic studied by von Ermengem in 1895 in which fifty persons were affected was definitely traced to spoiled ham, and subsequent epidemics to the blood and liver sausages prepared in Wurttemberg and Baden. Quite recently infection of six men of the Twentieth Aero Squadron located at Kelly Field, Texas, was reported by Lieut.-Col. E. B. Vedder.[1] The classical syndrome of difficult swallowing, blurred vision, diplopia, dizziness and weakness of the legs appeared in all of the patients. All stated that they had eaten sausage a few days previously, and it was ascertained that the men who were infected had eaten the sausage raw, whereas most of the members of the squadron had eaten the sausage only after it was boiled. The sausage in question had been purchased on Saturday and kept in an icebox until the following Monday, and it was known that the allowance of ice was insufficient to preserve meat satisfactorily. Studies are still being made in an endeavor to prove absolutely the source of the epidemic through isolation of the bacillus, but the results are not yet available. The suggestion to eat such products only when thoroughly cooked cannot be reiterated too frequently.

FORDNEY TARIFF BILL TAXES KNOWLEDGE

In his brilliant history of the reign of Ferdinand and Isabella, Prescott records, as one of the signs of development of civilization in Spain under these monarchs, the fact that they issued a decree admitting all books from foreign countries to Spain, free of duty. Apparently, the United States is about to revert to a stage of civilization lower in this respect than that of Spain five hundred years ago. The Fordney Tariff Bill (H. R. 7456), now before Congress, provides for an increased duty on all books imported from other countries, the duty to be based on the American rather than the foreign valuation. This provision, if adopted, will tax all books, with minor exceptions, of foreign origin, regardless of the language in which they are printed. Previous tariff laws exempted all foreign books except those printed in English and published within twenty years of importation. The proposed bill would levy a duty on all books regardless of their character or the use to which they are to be put. Libraries, by making affidavit, can get their books free of duty, but the number allowed is reduced. Libraries and books of immigrants, which heretofore have been exempt, are subject to duty when exceeding two hundred and fifty dollars in value. These provisions, as the *Library Journal* well says, constitute a tax on knowledge and will prove a serious embarrassment to libraries, scientific organizations and workers, and all others interested in securing books at reasonable prices. Necessarily, the duty will be added to the price, and the purchaser, who, in the case of scientific, historical and technical volumes, is generally a worker on a salary or a professional man on a limited income, will be forced to pay the increased prices. Such a tax cannot yield any large revenue, nor will its adoption protect any domestic industry, either infant or full grown. The executive board of the American Library Association has protested against the provisions of the Fordney Bill on this subject and has asked the Senate committee to modify the bill so as to retain the tariff provisions now in force. In this protest, THE JOURNAL, on behalf of the medical profession of the United States, heartily joins.

LOCATION OF PARASITIC INVADERS IN THE BODY

Although all sorts of degenerative changes of parenchymatous tissues, such as those of the kidney, heart and liver, frequently occur in the course of infection, a brief consideration will suffice to bring the conviction that typical, characteristic recurring infectious or parasitic diseases affecting the central nervous system, the ductless glands, the liver and kidneys, the muscular system and the joints do not occur excepting as secondary localizations of diseases involving the more external tissues. In an exceptionally thoughtful address on parasitism as a factor in disease, before the Association of American Physicians, Theobald Smith [1] has elucidated the reasons for the comparative freedom of the organs cited from frequent parasitism. The biologic requisite to be fulfilled by the parasite in its multiplication is that the latter process should take place in such a way that escape in large numbers from the host after the parasites have assumed a more or less resistant form becomes possible. This is best accomplished when parasites settle down and multiply near some portal of exit, first the skin or subcutis, second the respiratory tract, third the digestive, and fourth the genital tract. As an explanatory illustration, Smith cites this hypothetic possibility: If it should happen that a race of *Spirochaeta pallida* arose which promptly and exclusively localized in the central nervous system, it would die out for want of an exit to another host. The tendency to locate and multiply

1. Medico-Military Review, 8: 66 (Sept. 15) 1921.

1. Smith, Theobald: Parasitism as a Factor in Disease, Science 54: 99 (Aug. 5) 1921.

in tissues of lower vital dignity, i. e., near the surface of the body or the mucous membranes, safeguards the host as well as the parasite. Hence, in fact, localization of disease agents or parasites in tissues or organs except those from which ready escape to the exterior is possible is, in Smith's judgment, abnormal and unnecessary, so far as the infective agent is concerned.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Chiropractors Found Guilty of Illegal Practice.—It is reported that the following chiropractors were recently found guilty of practicing medicine without licenses: Shah Za De, Oakland; Linden D. McCash, Berkeley; A. B. Black, Riverside, and Mary Mitchell, Whittier. The three first named chose to serve jail sentences rather than pay the fines imposed.

Healer Arrested When Patient Dies.—Isaiah Cudney, reported as being formerly of New Orleans, and operating recently in Los Angeles as a "faith healer," is said to have been arrested in the latter city on a charge of manslaughter in connection with the death of a patient whom he had treated. The patient had suffered from rheumatism for eleven years, and the coroner's jury decided that she died as the result of manipulations by Cudney which fractured her limbs.

DELAWARE

Medical Society Meeting.—At the monthly meeting of the Newcastle County Medical Society, held, September 20, at Wilmington, Dr. James M. H. Rowland, dean of the University of Maryland School of Medicine, Baltimore, spoke on "Conduct of Labor in the Cases with Slight Degree of Dystocia of the Pelvis."

DISTRICT OF COLUMBIA

Personal.—It has been announced that Dr. James A. Gannon has been appointed associate professor of surgery, and Dr. James A. Cahill, clinical professor of surgery at the Georgetown University School of Medicine, Washington.

ILLINOIS

Hospital News.—Work has been started on the addition to the West Suburban Hospital, Oak Park, at a cost of approximately $180,000.

District Medical Meeting.—A meeting of the sixth councilor district was held, September 29, at Alton. Papers were read by Dr. George W. Crile, Cleveland; Dr. Charles E. Humiston, Chicago, president of the Illinois State Medical Society; Dr. Edwin P. Sloan; Dr. Leon Bloch, Rush Medical College, Chicago, and Dr. John L. Tierney, St. Louis.

State Directory of Physicians.—The director of the Department of Public Health of Illinois is compiling information for an up-to-date directory of the physicians of the state. The last official register of legally qualified physicians in Illinois was issued in 1915. Each district councilor will be asked to help in sending in the names, and the director of the department of registration and education will undertake the publication of the list.

Personal.—At the regular meeting of the Peoria County Medical Society, held, September 20, at Bloomington, Dr. Edwin P. Sloan, president elect of the Illinois State Medical Society, discussed "Conditions of the Medical Science in Europe." Dr. Sloan has recently returned from an extended trip abroad, having visited clinics in Paris, Berne, Naples, Rome, Berlin and London.——Dr. John W. H. Pollard was recently appointed full-time health commissioner of Quincy. Dr. Pollard formerly occupied the chair of hygiene and physical education at Washington and Lee University, Lexington, Va.——Governor Small has appointed Dr. Thomas H. Leonard, Lincoln, as assistant director of the department of public health to succeed Dr. George Thomas Palmer.——Dr. Isaac D. Rawlings, director of public health, Illinois, recently addressed the Adams County Medical Society and a meeting of Adams County dairymen. He gave figures showing how the death rate among children has been cut down by the pasteurization of milk.

Revised Regulations of Health Department.—The rules and regulations of the state department of public health governing the quarantine and control of various communicable diseases have been revised and are now ready for distribution. Several important changes in reference to the length of quarantine in certain cases and a number of minor changes have been made. Under the title "Minor Communicable Diseases," the rules concerning chickenpox, measles, German measles, mumps and whooping cough are given. Special pamphlets are devoted to diphtheria, scarlet fever, smallpox and typhoid fever. In addition to these complete sets, a synopsis of all the rules is issued in a separate leaflet, of which copies may be secured on application to the department. Under the civil administrative code, provision is made for the appointment of a board to act in an advisory capacity with the director of the state department of public health. Governor Small, September 22, appointed the first board of the kind that has ever been selected, consisting of: Dr. William A. Evans, Chicago; Dr. John Dill Robertson, Chicago; Dr. Edwin P. Sloan, Bloomington; Dr. Charles W. Lillie, East St. Louis, and Mrs. E. N. Monroe, Quincy.

Chicago

Dr. Bevan an Officer of the Legion of Honor.—Dr. A. D. Bevan, past President of the American Medical Association, has had conferred on him the title of Officer of the Legion of Honor for services rendered to medical science and education and as President of the American Medical Association during the war. Dr. Bevan regards this, not so much a personal honor, as recognition by the French government of the war service rendered by the American Medical Association.

Diphtheria Prevention.—At the meeting of the special diphtheria commission, appointed by Commissioner of Health Robertson to inaugurate a system of education, which will free Chicago and its surroundings from diphtheria, which takes the lives of hundreds of children annually, Dr. Robertson urged the universal use of diphtheria toxin-antitoxin as a diphtheria preventive. He announced that the value of this toxin has been demonstrated beyond question and that immunity resulted in 98 per cent. of the cases in which the preventive was used among children from 6 to 10 years of age.

INDIANA

Personal.—At the meeting of the Muncie Academy of Medicine, held, September 27, at Muncie, Dr. Irving W. Potter, Buffalo, gave an address on "Versions."

Epidemic Closes Schools.—It is reported that an epidemic of diphtheria and scarlet fever has resulted in the closing of all schools at Monon, and the placing of a ban on public meetings. No child under 16 years of age is allowed on the streets.

Hospital News.—It has been announced that an appropriation of $5,000 has been made by the LaGrange County Council for a hospital at the county infirmary.——A new addition has been added to the Indiana State Soldiers' Home, Lafayette, with seventy beds, making a total of 250 beds. The addition will include a kitchen, roentgen-ray department and nurses' cafeteria. The building will be completed in 1922, at a cost of $175,000.

State Medical Meeting.—At the annual session of the Indiana State Medical Association, held, September 28-30, at Indianapolis, the following officers were elected for the ensuing year: president, Dr. William R. Davidson, Evansville; first vice president, Dr. Thomas M. Jones, Anderson; second vice president, Dr. John R. Reed, Logansport; third vice president, Dr. Eli S. Jones, Hammond, and secretary-treasurer, Dr. Charles N. Combs, Terre Haute (reelected). Muncie was chosen as the meeting place for 1922.

IOWA

Conference on Community Health.—In connection with the annual meeting of the Iowa State Conference of Social Work, a conference on community health was held, September 27. The program was devoted to the general topic of team work for health in Iowa, and the program included representatives

of the Red Cross, department of public instruction, board of control of state institutions, the state board of health, the U. S. Veterans' Bureau, the Iowa State Medical Society, the American Legion, the Federation of Women's Clubs, the Parent-Teachers' Association, the W. C. T. U. and other women's organizations, the foreign bureaus and the state home demonstration agents. The meeting was also featured by an address delivered by Dr. Frank Billings on progress of medicine and the "Community Plan." The following officers were elected: president, Dr. F. E. Sampson, Creston; vice presidents, Mrs. I. B. Wise, Cedar Rapids, and Dr. George Mobridge, Glenwood, and secretary-treasurer, Miss L. Cottrell, Iowa City.

KENTUCKY

State Medical Meeting.—The seventy-first annual meeting of the Kentucky State Medical Association was held September 20-22, at Louisville, under the presidency of Dr. Joseph H. Stucky, Lexington. The following officers were elected for the ensuing year: president, Dr. Louis Frank, Frankfort; first vice president, Dr. David W. Gaddie, Hodgenville; second vice president, Dr. Juanita Jennings, Harlan County; third vice president, Dr. Clarence W. Rogers, Rinneyville. Paducah was chosen as the city for next year's meeting.

LOUSIANA

Hospital News.—The Franciscan Sisters, who have a hospital at present in Monroe, are endeavoring to raise $30,000 for the erection and establishment of a hospital in Baton Rouge.

Personal.—Dr. John Signorelli has been made head of the new department of the city board of health that will work in close alliance with the Child Welfare Association to bring about a reduction in infant mortality in New Orleans.——Dr. William H. Wood, recently commissioned as surgeon with the rank of major in the Medical Reserve Corps, has been assigned to the U. S. Marine Hospital 14, and reported, September 15, at the former Algiers Naval Station Hospital.

MAINE

New Appointments on Board.—Governor Baxter has recently appointed as members of the board of registration of medicine Dr. Mary F. Cushman, Farmington, and Dr. Alan Woodcock, Bangor, to take the places, respectively, of Dr. Austin I. Harvey, deceased, and Dr. Eugene H. Andrews, whose term of office had expired. Dr. Adam P. Leighton, Jr., was reappointed on the board.

MARYLAND

Personal.—Dr. Frederick H. Baetjer, Baltimore, was given a signal tribute during the recent sessions of the American Roentgen Ray Society, held at Washington, when a dinner was given by the society in his honor. At its conclusion, Dr. Baetjer was presented with a handsomely bound volume in which were several hundred personal messages of admiration from men in all parts of the world with whom he has been in contact since his student days. Dr. Baetjer is described as one of the heroes of science. In the study and use of the roentgen ray, he has been one of the leaders, and now is called by his associates in the work the last of the old guard. He has undergone repeated operations to correct ills suffered in the course of his work.——Dr. Frederick Reinhard, one of the medical inspectors of the Baltimore public schools, has resigned and has sailed for Czechoslovakia to take up the child welfare work with the American Red Cross. He will work with Dr. James H. Mason Knox, Jr., who left Baltimore, September 3. Dr. Reinhard's headquarters will be at Prague, and he expects to spend a year in Europe. He assisted in the antityphoid campaign in Serbia with the Red Cross in 1915.

MASSACHUSETTS

Hospital News.—The Forest Hills Hospital, with a present capacity of sixty beds, is constructing a new building of 135 beds. The building is to be completely equipped and is of modern, fireproof construction.——The trustees announce that the seventy-fifth anniversary of Ether Day and the exercises in celebration of the centennial of the opening of the Massachusetts General Hospital, Boston, will be held, October 18, in the Moseley Memorial Building. Addresses will be given by Drs. Henry P. Walcott, Frederick C. Shattuck, Harvey Cushing, D. Macfie Campbell, and Major-Gen. Merritte W. Ireland, U. S. Army.

MICHIGAN

Resigns from Medical School.—Dr. Charles W. Edmunds has resigned as assistant dean and secretary of the University of Michigan Medical School and will hereafter devote his entire time to teaching and research work in pharmacology.

MINNESOTA

Hospital News.—It has been announced that contracts have been awarded by the state board of control for a nurses' home to be erected at Puposky, for the Tuberculosis Sanatorium of Beltrami, Koochiching and Hubbard counties.——The work of construction on the new modern sanatorium at Minneapolis is being rushed to permit occupancy in October. The total cost of the building is $300,000.

Personal.—The mayor of St. Paul has appointed Dr. Francis E. Harrington, Minneapolis health commissioner, chairman of the public health committee of the League of Minnesota Municipalities.——Dr. Thomas S. Roberts, professor of ornithology and associate curator of the Zoological Museum of the University of Minnesota, presented a lecture on Itasca Park, September 23, at the Mayo Clinic, Rochester. The lecture was under the auspices of the Mayo Foundation Chapter of Sigma XI and the Rochester Unit of the Minnesota General Alumni Association.

MISSOURI

Personal.—Dr. James A. Waterman, Breckenridge, a member of Caldwell County Medical Society, has been appointed physician at the state penitentiary, Jefferson City. Dr. Waterman served in this position during the administration of Governor Hadley.——Dr. Edward H. Clark, Kansas City, has accepted the position of medical referee in the Veterans Bureau at Washington, D. C., and will act as diagnostician for the government.——Dr. Tyrrel S. Bruton, Seymour, has accepted the position of assistant physician at the State Sanatorium for Tuberculosis, Mount Vernon.

University of Missouri to Establish Four Year Course.—The board of curators of the University of Missouri has voted to establish a four year course in medicine as soon as hospital facilities can be provided for clinical instruction. For a number of years the medical course at the state university has consisted of two years. The extra session of the legislature, recently adjourned, appropriated $250,000 for the erection of a state hospital at Columbia for the purpose of providing clinical material for the medical students. It is expected that a similar sum will be appropriated at each session of the legislature until $1,000,000 has been appropriated for hospital facilities. The legislature also appropriated $200,000 for the erection of a new building for State Hospital No. 2 at St. Joseph.

NEW JERSEY

Health Promotion Week.—Twenty-three local organizations, including the board of health, board of education, child welfare society and the tuberculosis association, cooperated in an exhibition of various welfare organizations, lectures and films relating to tuberculosis, child welfare, venereal disease work and general public health problems, held, October 3, in Montclair.

NEW YORK

Katonah Sanitarium Burns.—The Hilbourne Club, a sanatorium conducted by Dr. Samuel T. Armstrong, a short distance from Kantonah, was totally destroyed by fire on the night of September 26. The loss is estimated at $60,000.

Binghamton Academy of Medicine.—At a meeting of the academy, held, September 20, at Johnson City, the following officers were elected: Dr. John H. Martin, president; Dr. Sylvanus J. Nunn, vice president; Dr. Hubert B. Marvin, secretary, and Dr. Lester H. Quackenbush, treasurer.

New York City

Personal.—Dr. John W. Churchman has been awarded the Alvarenga prize, by the College of Physicians of Philadelphia, for his work on "Selective Bacteriostatic Action of Gentian Violet."—Dr. Russell F. Maddren, Brooklyn, sailed recently for China, where he will occupy the chair of ophthalmology in the Yale Medical School at Changsha in the province of Hunan.——Dr. Harry M. Archer, honorary deputy chief of the New York fire department, was recently the recipient of a gold watch and chain, a replica of his fire badge, and an embossed testimonial script, in recognition

of his surgical and medical work in the interest of the men in the department. The presentation was made by Commissioner Thomas J. Drennan.

College of Physicians and Surgeons Begins New Era.—The opening exercises of the College of Physicians and Surgeons of Columbia University were held, September 28, when Dr. Butler outlined the plans for the upbuilding of the new $15,000,000 medical center made possible by the alliance between Columbia University and the Presbyterian Hospital. Dr. Walter W. Palmer, who enters on his new duties as Bard professor of the practice of medicine, delivered the main address on "The Trend and Scope of Modern Medical Education." He referred to the controversies arising from the establishment of the clinical branches on a university basis, and expressed the opinion that this trend, though vigorously debated, appears to be in the right direction.

NORTH CAROLINA

Hospital News.—Drs. James P. Matheson, Clarence N. Peeler and Henry Lee Sloan recently purchased a site from Dr. John R. Irwin, Charlotte, and will erect a modern hospital for the exclusive treatment of diseases of the eye, ear, nose and throat. The land was purchased for $60,000, and the building will cost approximately $125,000; it will be four stories high, with one floor devoted to the private offices of the above named physicians.

Ten Cents for Diphtheria Preventive.—The quarantine officer, Lexington, announces that the state board of health wishes the attention of the parents called to the aiding of diphtheria prevention. The Davidson County Department of Health has given up to date toxin-antitoxin to 323 children, free, but from this time on, because of the expense, the department will be compelled to charge 10 cents for the complete treatment, which consists of three treatments given one week apart. This is the actual cost of the toxin-antitoxin that is furnished by the North Carolina State Board of Health.

OHIO

Personal.—Dr. Herman J. Bollinger has resigned from the staff of the Toledo Municipal Hospital, effective October 1. He will be succeeded by Dr. L. Rosenberg.

Hospital News.—Ground has been broken for an addition to the Columbus Radium Hospital, at a cost of $25,000, which will increase the capacity from thirty to fifty-five beds.——Through the efforts of local physicians and the Exchange Club, the Defiance Hospital, which was closed in the spring at the expiration of the lease on the building, has been reopened.

PENNSYLVANIA

Personal.—Governor Sproul has appointed Dr. Walter E. Lee a member of the bureau of medical education and licensure of the department of education, Philadelphia, to succeed Dr. John M. Baldy, resigned to become commissioner in the newly created department of public welfare. Dr. Verne G. Burden, chief resident physician of the Hospital of the University of Pennsylvania, Philadelphia, has resigned to join the staff of the St. Mary's Hospital (Mayo Clinic), Rochester, Minn.

Lackawanna County Society.—The monthly session of the society was held at Hillside Home, Clark Summit, September 17. Dr. Herman O. Mosenthal, New York Post-Graduate School, read a paper on "Blood and Urine Examination in Ambulatory Cases of Kidney Diseases"; Dr. Thomas Turner Thomas, Philadelphia, on "Nonoperative Fractures," and Dr. Edward Graham, Philadelphia, on "Vitamins." The society were guests of Dr. Thomas Rutherford, superintendent of the home.

Museum of Ophthalmic and Otolaryngologic Pathology.—At the meeting of the Council of the American Academy of Ophthalmology and Oto-Laryngology, held in June, it was decided to establish a museum, the collection to be located in the Army Medical Museum at Washington, D. C., and conducted by the curator, the expenses to be borne by the American Academy of Ophthalmology and Oto-Laryngology. Under the regulations of the Army Medical Museum, the pathologic material is open for study to any qualified person, and a laboratory and microscopes are available.

PHILIPPINE ISLANDS

Expedition to Leprous Islands.—Dr. Ildefonso Tobillo, accompanied by a bacteriologist, has visited several islands of the Philippine Archipelago in a campaign to segregate lepers, with the cooperation of the Philippine health authorities. Two hundred and seventy-one lepers were collected and taken to the leprosarium at Culion for isolation and treatment.

SOUTH CAROLINA

Personal.—Dr. Vance W. Brabham has resigned as chairman of the Orangeburg city board of health, to take effect in October.

Free Clinic.—A diagnostic clinic which will be free for the public of Columbia and South Carolina was opened at the Baptist Hospital, Columbia, in September. Six rooms have been fitted up in the basement of the hospital, with the use of the laboratory and the roentgen-ray room.

TENNESSEE

Personal.—Dr. August Hermeier Wittenborg, professor of anatomy in the medical department of the University of Tennessee, has been refused citizenship in the United States. Failure to register for service in the war was given as the reason for the withdrawal of Dr. Wittenborg's petition for naturalization. Dr. Wittenborg is a German by birth, but has resided in this country for several years.

TEXAS

Personal.—Dr. Frau R. S. White, Dallas, has been appointed superintendent of the Hospital for the Insane, Wichita Falls, and will take up his duties there as soon as the building is completed.

Hospital News.—It has been reported that the contract has been awarded for the construction of the new unit (for negroes) at the Houston Tuberculosis Hospital, at a cost of $10,000, one half of which is to be contributed by the county.

Mental Hygiene Clinic.—Plans have been outlined by the Houston city health officer and the director of the social service bureau for the establishment of a mental hygiene clinic to devote special attention to abnormal children and to be operated in connection with the health department.

VIRGINIA

Walter Reed Medical Society.—A newly organized medical society, consisting of physicians of Gloucester and surrounding counties, formed in memory of Walter Reed of Gloucester County, held its first session at Newport, September 14-16. General Hugh Cumming addressed the meeting.

State Medical Meeting.—The Medical Society of Virginia will hold its annual meeting at Lynchburg, October 18-21, under the presidency of Dr. Alfred L. Gray, Richmond. Dr. Alfred Stengel, Philadelphia, will deliver an address on medicine, and Dr. William J. Mayo, Rochester, Minn., on surgery. Dr. John Lovett Morse, Harvard University, Boston, will present a paper dealing with the pediatric problem.

CANADA

New Medical Building for the University of Alberta.—A new building for the medical school of the University of Alberta has just been completed and the teaching equipment is now being transferred to it.

Public Health News.—Recently at Oshawa, Ont., a campaign was launched to raise money for the National Sanitarium million dollar emergency fund. The district between Whitby and Napanee will be canvassed by prominent men interested in this movement. Among the speakers at the meeting were Dr. Kendall, superintendent of Muskoka Free Hospital, and Dr. Thomas W. G. McKay, Oshawa.——Dr. Franklin S. Ruttan, medical officer of health, Woodstock, Ont., has appealed to the county judge to increase his annual salary by $1,000 under the statute which empowers a county judge to set the salary of a medical officer of health, when the council and the medical officer of health disagree. Dr. Ruttan applied to the city council some time ago for an increase, but his request was refused.

Hospital News.—A by-law is to be submitted to the electors of St. Thomas, Ont., on armistice day, November 11, for the issuing of $100,000 debentures for the erection of the proposed memorial hospital on the site of the present nurses' home, in connection with the Amasa Wood Hospital. The estimated cost is $160,000, of which $60,000 will be raised by private subscription. The memorial feature will be the providing of free hospital accommodation and medical attention to returned soldiers.——It is proposed to establish a new hos-

pital on the site of the Del Monte Hotel at Preston, Ont. When plans are carried out it will mean that Preston will have a sanatorium that eclipses any other in the country, rivaling that of Clifton Springs and other famous health resorts in the United States. One of the features contemplated is an inclined railway to the top of the hill, where the hospital will command a magnificient view of the town and surrounding country.

Personal.—Dr. Warren E. Gallie, Toronto, has recently been appointed head of the surgical staff of the Hospital for Sick Children, Toronto, Ont. He succeeds Dr. C. L. Starr, whose resignation follows his appointment as professor of surgery at the University of Toronto.——At the July examinations of the Royal College of Physicians, London, England, Dr. Donald Kilgour, Toronto, Ont., was admitted as a member of the college.——Dr. Joseph A. Baudouin, assistant secretary of the Superior Board of Health of the Province of Quebec, and professor of hygiene in the University of Montreal, has been awarded one of the fellowships for the study of medicine and public health in the United States granted by the Rockefeller Foundation. Dr. Baudouin has been head of the municipal board of health of Lachine, Quebec, since 1909, and is the author of several books and articles on medical and sanitary subjects.——Dr. Hubert D. Kitchen, Souris, Manitoba, has also been granted a fellowship from the Rockefeller Foundation for graduate study of internal medicine.

GENERAL

Meeting of Ex-Service Men.—The first annual reunion of the ex-members of Evacuation Hospital No. 2, who trained at Indianapolis and Fort Benjamin Harrison, was held, September 15-17, at Indianapolis. Dr. James N. Vanderveer, Albany, first commanding officer of the organization, exhibited lantern slides of scenes they had visited overseas.

Mississippi Valley Medical Association.—At the meeting of the association to be held at St. Louis, October 13-15, the following physicians have accepted invitations to give scientific addresses: Drs. Llewellys F. Barker, Baltimore; Charles H. Frazier, Philadelphia; John de J. Pemberton, Rochester, Minn.; Isaac A. Abt, Chicago, and C. Jefferson Miller, New Orleans.

New England Surgical Society.—At the fourth annual meeting of the society, held, September 21-22, at Worcester, the following officers were elected for the ensuing year: president, Dr. Charles A. Porter, Boston; vice president, Dr. Herbert L. Smith, Nashua, N. H.; secretary, Dr. Philemon E. Truesdale, Fall River, Mass., and treasurer, Dr. Peer P. Johnson, Beverly, Mass. The society is limited to 100 members.

Commission of Serbian Physicians.—Dr. Georges J. Nikolitch, undersecretary and first medical officer of the Serbian ministry of health, Dr. Georges Joannovitch, professor of pathologic anatomy, and Dr. Radenko Stankovic, professor of internal medicine, Medical School, University of Belgrade, have recently arrived in the United States to study the public health administration, medical education and hospital organization in the United States, as guests of the Rockefeller Foundation, and will visit the principal cities of the country for the purpose of observing what American states and cities are doing in the fields of child welfare, preventable diseases, tuberculosis, cancer research, pathology, serology and venereal disease control.

Bequests and Donations.—The following bequests and donations have recently been announced:

Children's Hospital of Philadelphia, $25,000, for erection of a wing or separate building for crippled children, to be called the Thomas H. Powers Memorial; Pennsylvania Hospital, $8,000; Home for Incurables, $8,000, for endowing a room; Home of the Merciful Saviour for Crippled Children, $5,000; Chestnut Hill Hospital, $5,000; Orthopedic Hospital, $5,000, for endowing a bed, by the will of Mary Powers Harris, Philadelphia.

Riverside Community Hospital, Riverside, Calif., land to the value of $15,000, for a new institution, by Mrs. Florence Barton Loring.

Children's Hospital School, Baltimore, $2,000; the Home for Incurables, Baltimore, $2,000; the Maryland School for the Blind, $2,000; the Endowood Sanatorium, $2,000, each free of taxes, by the will of Mrs. Laura V. Robinson, Baltimore.

Jefferson Medical College, Philadelphia, a fund for students who are unable to pay their tuition and board, at a maximum of $300 for each student, as a memorial to Dr. John V. Shoemaker, by the will of his widow, Mrs. Jennie M. Shoemaker, Philadelphia.

Lenox Hill Hospital, New York, $25,000; Monmouth Memorial Hospital, Spring Lake, N. Y., $5,000, by the will of Mrs. Bertha Franzisca Achelis.

American Public Health Association.—The fiftieth annual meeting of the American Public Health Association will be the occasion of a health fortnight, which will include three major divisions—a health institute, November 8-11; a health exposition, November 14-19, and the fiftieth annual meeting of the American Public Health Association, November 14-19. Representatives from virtually every state in the Union and from many foreign countries will participate in the program. November 13 will be observed as health Sunday in many New York churches, in the synagogues and by numerous business and social organizations. The New York County chapter of the American Red Cross is cooperating with the general committee in the arrangement for this service The public health exposition will be the largest affair of its kind ever held in New York City. It will be conducted under the joint auspices of the Department of Health of the City of New York and the American Public Health Association. Two floors of the Grand Central Palace will be occupied by educational and philanthropic and commercial exhibits. The profits from the exposition will be devoted to establishing nutritional clinics. The health institute, November 8-11, will present established methods of public health work. About forty demonstrations have been planned. The American Public Health Association, the health department of the city of New York, the New York State Department of Health, the U. S. Public Health Service, the National Health Council, and the Committee on Public Health of the New York Academy of Medicine are cooperating. The chairman of the committee in charge is Dr. W. A. Evans. The director of the institute is Dr. D. B. Armstrong of the National Health Council. The American Public Health Association sessions will begin on November 14. Headquarters will be at the Hotel Astor, Broadway and Forty-Fourth Street. A Jubilee historical volume, entitled "Fifty Years of Public Health," will be ready for distribution during health fortnight.

LATIN AMERICA

S. Paulo Medical School Officially Accepted.—The diplomas of the Faculdade de Medicina e Cirurgia of S. Paulo, Brazil, have now been officially accepted by the federal authorities, and there is much rejoicing in medical circles.

Congress of the Medical Press of Cuba.—In connection with the Fifth Cuban Medical Congress to be held at Havana, December 11-17, there will be held the Fourth Congress of the Medical Press of Cuba, December 9-10. This congress will be presided over by Dr. Jorge LeRoy, the secretary being Dr. Octavio Montoro. Both meetings will be held in the building of the Academia de Ciencias Médicas, Fisicas y Naturales of Havana.

Chagas Returns to Brazil.—On his return to Brazil Dr. Chagas, the director general of public health, expressed his gratification at the welcome he had received in the United States. He stated that he intends now to put to practical use the observations he made in the United States and especially to insist on the extension of public health teaching and rural health organization. He praised very highly the progress made in this country in infant hygiene, industrial sanitation, medical teaching, nursing service and hospital organization.

Personal.—Prof. Alfredo de Andrade has had to resign his charge of the Bromatologic Laboratory of the Brazil Public Health Service on account of other duties. The personnel of the laboratory presented him with a bronze souvenir plate inscribed "Homenagem dos Chimicos do Laboratorio Bromatologico ao Prof. Andrade, seu organizador."—— Dr. Benigno Souza, a prominent surgeon of Havana, Cuba, is now in Washington, D. C., after visiting some of the most important clinics in the East. He expects to return in the near future with his family to Cuba.——Dr. I. González Martinez, a prominent roentgenologist and bacteriologist of San Juan, Porto Rico, attended the recent roentgen-ray meeting held in Washington, D. C.——Dr. A. Córdova, a Cuban alienist, is now in California accompanied by his wife and daughter.—— Dr. Paulina Luisi has returned to Montevideo, Uruguay, after a prolonged stay in Europe, where she delivered a number of lectures.

FOREIGN

Personal.—Dr. Charles Edward Amory Winslow, Yale University, medical director of the Red Cross, is in Geneva attending the meeting of the League of Nations.

German Medicolegal Society.—The recent annual meeting of this society was held at Erlangen, and the speakers emphasized anew the imperative necessity for official and police necropsies. The president and vice president elected were Professor Reuter of Graz and Professor Merkel of Munich.

Research on Extermination of Vermin.—The *Münchener medizinische Wochenschrift* mentions the organization at Mannheim of a central office for coordination of research on

the scientific extermination of vermin and combating the spread of epidemics. E. Nägelstein, a chemist of Mannheim, is at the head of the scientific testing and investigating bureau, and J. Brech is president of the organization and has charge of the literary and statistical work. His address is Mannheim-Neckarau.

Congress for Medical Radiology.—The second congress of the organized radiologists of the Scandinavian countries was held recently at Copenhagen. The three topics on the order of the day were the radiologic diagnosis of disease in appendix and cecum; roentgen-ray treatment of the thyroid, and radium treatment of the thyroid. Twenty-five other communications were also announced on the program, discussing radiology in relation to internal medicine, surgery and dermatology in addition to gynecology.

The Brisseau Cataract Memorial.—September 25 was the date appointed for the unveiling of the memorial to Brisseau of Tournai, Belgium, who published in 1705 the first account of the nature of cataract. The committee in charge of the memorial has republished his account in a pamphlet as a souvenir and bibliophile curiosity. For information address Dr. A. de Mets, 29 avenue Van Eyke, Antwerp. The ancients explained cataract as the pouring out of some substance on the lens from above, and hence the name "cataract."

Benoist Prize Awarded.—The prize founded by a sum bequeathed to the Swiss government for the purpose by a Paris lawyer, M. Benoist, amounts to 20,000 Swiss francs. It is to be awarded annually for the most useful discovery, invention or research made in science during the year by a Swiss scientist or one who has resided in Switzerland for at least five years. The first award was made recently, the prize being conferred on Dr. Arthus, formerly assistant director of the Pasteur Institute at Lille and of late years professor of physiology at the University of Lausanne. The prize was awarded as a tribute to his recent work "De l'Anaphylaxie à l'Immunité" which is said to represent a lifetime of original research.

The American Medical Association of Vienna.—The revival of this association, an organization of American physicians residing or studying in Vienna, was recently mentioned in these columns. The Vienna *Klinisch-Therapeutische Wochenschrift*, in its issue of Sept. 1, 1921, gives the list of officers and the aims of the association which are said to include the restoration of scientific and social relations between American physicians and the Vienna medical faculty; exchange of medical journals between Germany, Austria and America; the wiping out of the prejudice against German science and thereby preventing such happenings as the exclusion of German surgeons from the International Surgical Congress; keeping up a regular special correspondence with THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION to report the achievements of the Vienna medical school; keeping up propaganda to attract American physicians to study in Vienna and supplying information as to courses in English, prices, board, lodging, etc. The officers include Drs. Gustav Baar, Portland, Ore., president; Capt. W. K. Turner, M. C., U. S. Army, vice president, and A. G. Reinfeld, Newark, N. J., secretary.

Deaths in Other Countries

Sir **P. Freyer** of London, one of the first to operate successfully on the bladder, kidneys and prostate gland, aged 68. ——**J. W. Haward,** former demonstrator of anatomy, St. George's Hospital, London, among the first to describe the bony metastases of primary carcinoma of the thyroid, aged 80.——Dr. **Yu Shufen,** from pneumonic plague, while combating the epidemic in Shantung, August 24.——Dr. **François-Franck,** professor of physiology at the Collège de France, Paris, and author of works on the motor functions of the brain, epilepsy, etc., aged 72.——Dr. **J. Nogier,** medical inspector of the army, retired, formerly director of the army medical school.——Dr. **Nicolás Roveda,** professor of histology at the University of La Plata.——Dr. **E. Ausset,** lecturer at the University of Lille.——Dr. **R. Hantsch,** assistant at the Pathology Institute at Jena, killed in mountain climbing.——Dr. **E. Schneider,** an ophthalmologist of Copenhagen, whose ophthalmologic table made up from frozen sections of a normal eye is well known.

CORRECTION

Appointment at Albany Medical College.—In THE JOURNAL for October 1 it was reported that E. C. Jacobson had been appointed as instructor in pathology at Albany Medical College. The report should have read "professor of pathology and bacteriology."

Government Services

Surgeon at Galveston Resigns

Passed Asst. Surg. Warren F. Fox, in charge of the U. S. quarantine station, Galveston, has announced his intention to resign from the U. S. Public Health Service. Passed Asst. Surg. Paul D. Mossman, Angel Island, Calif., will assume charge of the station.

Colonel Forbes Advises on Proposed Hospital for Mental Disorders

The introduction, by Senator A. O. Stanley of Kentucky, of a bill in Congress appropriating $5,000,000 for the construction of a hospital, to be used in the treatment of disabled soldiers suffering with mental disorders, has resulted in a statement issued by Col. Charles R. Forbes of the Veterans' Bureau urging that this new institution, if constructed, be located at Washington, D. C. The Stanley measure has no provision naming the site for the location of hospital with the exception of a clause stating that it may be located in the District of Columbia or some other place. In his statement, Colonel Forbes said:

> Since the government has the land in Washington and since Washington is the ideal place for such a hospital, I believe that the proposed building should be erected where the center of all activities relating to soldier relief is located. On more than one occasion Gen. Charles E. Sawyer, the president's private physician, who has made an intensive study in this phase of soldier relief work, stated that Washington, because of its climatic and other conditions, is the proper place for locating a great hospital. Now that the bill has been introduced in Congress, which, if enacted into law, will provide the necessary funds for such an undertaking, the general's observations should not be overlooked. I believe with him and others who have given the subject much thought and deliberation that Washington is the city where such a hospital should be placed.

With the construction of this hospital as provided in the Stanley measure, Colonel Forbes believes that many of the difficulties besetting the Veterans' Bureau will be overcome.

Medical Naval Reserve Abolished

With the excpetion of Class 1, all classes of the medical naval reserve have been abolished as a result of an order issued by Secretary of the Navy Denby this week. The members of the reserve included in this order, however, are given the option of being disenrolled and transferred without pay to Class 6, which represents the volunteer section. The number of officers in the medical naval reserves, including warrant officers, totaled 1,543, who ranked from commander to lieutenant junior grade. They drew from the government two months' base pay every year plus 20 per cent. increase after four years' service in the reserve. All members of Class 1, medical naval reserves, are retained and will continue receiving their compensation. They are about 156, of whom thirty-four are now on active duty drawing full pay.

Nursing Force for Veterans' Bureau

At present there are 214 registered nurses employed by the Veterans' Bureau in special follow-up work for ex-service men throughout the United States. There are approximately 3,000 additional nurses engaged in the care of ex-service men. Of this number, 1,500 are employed in government hospitals under the direct jurisdiction of the U. S. Public Health Service, although the Veterans' Bureau, under the Sweet law, has advisory supervision over them. There are approximately 1,500 additional nurses employed in contract institutions.

Air Service Officer Receives Commendation

General Order No. 17, issued, September 20, by Headquarters, First Provisional Air Brigade, contained a letter of commendation from the chief of the air service to Major Samuel Meredith Strong, M. C., Hampton, Va., commending him for services rendered in connection with the search for the Martin bomber which recently fell in Nicholas County, W. Va., and for medical aid, intelligence and efficiency in connection with the care and transportation of the injured.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 12, 1921.

The British Association for the Advancement of Science

The annual meeting of the British Association for the Advancement of Science took place at Edinburgh. Some of the papers were of medical interest:

THE NATURE OF THE ELEMENTS

In his presidential address, Sir T. Edward Thorpe said that though Dalton's atomic theory has been generally accepted for nearly a century, only within the last few years had physicists arrived at a conception of the structure of the atom sufficiently precise to be of service to chemists. Investigation of the "superlatively grand question—the inner mechanism of the atom"—has profoundly modified the basic conceptions of chemistry. It has led to a great extension of our views concerning the real nature of the chemical elements. The discovery of the electron, the production of helium in the radioactive disintegration of atoms, the recognition of the existence of isotopes, the possibility that all elementary atoms are composed either of helium atoms or of atoms of hydrogen and helium, and that these atoms, in their turn, are built up of two constituents, one of which is the electron, a particle of negative electricity whose mass is only $\frac{1}{1800}$ of that of an atom of hydrogen, and the other a particle of positive electricity whose mass is practically identical with that of the same atom, have completely altered the fundamental aspects of the science. The idea of a primordial hyle, or of the essential unity of matter, has persisted throughout the ages. The more exact study within recent years of the methods of determining atomic weights, the great improvement in experimental appliances and technic, combined with a more rigorous standard of accuracy, have confirmed the belief that some natural law must be at the basis of the fact that so many of the most carefully determined atomic weights on the oxygen standard are whole numbers. Nevertheless, there were well-authenticated exceptions. The fact that a so-called element may be a mixture of isotopes—substances of the same chemical attributes but of varying atomic weight—has thrown new light on the question. It is now recognized that the fractional values independently established in the case of any one element by the most accurate experimental work of various investigators are, in effect, "statistical quantities" dependent on a mixture of isotopes. This result, indeed, is a necessary corollary of modern conceptions of the inner mechanism of the atom. The hydrogen isotope first detected by J. J. Thomson seems to be an integral part of atomic structure. Rutherford, by the disruption of oxygen and nitrogen, has also isolated a substance of mass 3 which enters into the structure of atomic nuclei, but which he regards as an isotope of helium, which itself is built up of four hydrogen nuclei together with two cementing electrons. The atomic nuclei of elements of even atomic number appear to be composed of helium nuclei only, or of helium nuclei with cementing electrons; whereas those of elements of odd atomic number are made up of helium and hydrogen nuclei together with cementing electrons. In the case of the lighter elements of the latter class the number of hydrogen nuclei associated with the helium nuclei is invariably three, except in that of nitrogen, in which it is two. The frequent occurrence of this group of three hydrogen nuclei indicates that it is structurally an isotope of hydrogen with an atomic weight of three and a nuclear charge of one. It is surmised that it is identical with the hypothetic "nebulium" from which our "elements" are held by astrophysicists to be originally produced in the stars through hydrogen and helium.

METEOROLOGY IN MEDICINE

In a paper on this meteorology in medicine, Dr. Angus Macdonald said that temperature was a fundamental factor influencing biologic reactions. As an illustration, he took the part played by temperature in the production of diseases due to protozoa. Scottish records showed that outbreaks of malaria coincided with abnormal high temperature over several months in consecutive years. Wars had been the main factor in the introduction of malaria infection, but the disease could not become endemic in Scotland, and an outbreak occurred only when importation in large volume coincided with a mean temperature of 60 Fahrenheit over a period, which was an event of rare occurrence in Scotland. The high temperature was necessary to the sexual phase of the malaria parasite in the Anopheles mosquito.

Trypanosomiasis: Mission to Tropical Africa

The Colonial Office has approved proposals made by the Tropical Disease Prevention Association for further investigation in Africa in regard to the serum treatment of trypanosomiasis. These proposals provide for a program of systematic work extending over about two years, to be carried out by a special mission. The mission will include animals as well as men in their investigations. It is estimated that the cost of the work will be $250,000, and a fund to meet it is being raised by the association. The mission, it was suggested, should consist of Dr. Marshall and Dr. Vassalo of the Uganda Medical Service, to whom the new treatment is owing, two assistant medical officers, two veterinary surgeons, and a secretary. The scope of their work is defined under four heads: (1) To carry out treatment of infected cases by the serum method, and to experiment as to technic and general principles of such treatment. (2) To make observations as regards prevention and immunization from the disease on human beings. (3) To carry out observations on animals to the same end. (4) To report on the present and future conditions as regards trypanosomiasis in Uganda, Nigeria and such other areas as may be approved by the Colonial Office.

A Plague of Insects

The prolonged drought, which has lasted the whole summer, has had a marked effect on insect life with certain consequences to man. Professor Lefroy, the entomologist of the Imperial College of Science and Technology, in a statement to the *Times* says that certain classes of insects have bred more extensively than usual this summer. Where there are lakes or other large supplies of water the mosquito has become exceedingly abundant, owing to the fact that it has had more generations than ordinary. The same with flies. The house fly, which breeds in manure, has also been able to breed more rapidly, and is therefore more abundant than in a normal year. During this year there have been quite an abnormal number of deaths from either wasp stings or the bites of the brown mosquito (which does not convey malaria) or from the bites of flies which have not been identified. To some extent this has been due to the fact that the heat and dry conditions have led these insects to attack man more freely; but we are ignorant of the reason why the bite of a harmless brown mosquito can cause death within two or three days, when we know that no specific disease, such as malaria, has been introduced.

The Use of Students for Blood Transfusion

Guy's Hospital Gazette says that the practice of allowing students, even of encouraging them, to give blood for transfusion is far too prevalent in the hospital. A patient is admitted in a very collapsed condition and blood transfusion is decided on. Even if any of his relatives are available, there is no time to treat their blood groupings. So the house surgeon goes off to the college to find a Group IV

donor. It speaks well of the men that he rarely has difficulty in finding a willing donor; for although the day is past when any one who gave a pint of blood became automatically a hero with his photograph in all the illustrated papers, yet the giving of this amount of blood does lay some strain on the donor's metabolism. It has been estimated that it takes, roughly, three weeks for the normal man completely to recover from the loss of a pint of blood. This was recognized by the army authorities during the war, who gave three weeks or a month's sick leave to donors of blood for transfusion. So that for three weeks after he has so altruistically obliged his friend the house surgeon, the donor's activities remain below par and the efficiency of the unit, and indirectly, of the hospital, is lessened. For these reasons alone the *Gazette* thinks that the practice ought to be discouraged or even prohibited, and suggests that it would not be difficult to follow the American plan of having professional donors.

A New Theory of Color Vision

It is generally supposed that a gradual transition from one color to another can be seen in the spectrum, corresponding to the gradual increase or diminution in the frequency of the waves of light on which the sensation of color depends. But Edridge-Green has shown that the eye is incapable of perceiving an indefinite number of spectral colors. By the use of a shutter, any part of the spectrum can be isolated, when it is found that a certain breadth appears all of the same color. Normal persons break up the whole spectrum into from sixteen to twenty uniform bands of color. Persons with abnormal sight divide it into a smaller number of areas varying with the nature of their color-blindness. Prof. J. Joly of the University of Dublin has recently proposed this theory to explain these peculiarities of color vision: When a ray of light reaches the retina, it sets free "photo-electrons." Each of these contains a known quantum of energy determined by the frequency or wave length of the kind of light to which its liberation is due. The electrons discharged by the red end, where the waves are long, have a small quantum of energy. There is a continuous increase in the quantum toward the violet end, where the short waves liberate more energetic electrons. These electrons have an action like the pulling of a trigger on the rods and cones of the retina, releasing a store of energy sufficient to send a stimulus up to the brain. But trigger action is a hit or miss; the energy of the propelled bullet depends on the explosive charge, not on the pull. The rods and cones of the retina are known to be the receptor cells which receive the stimulation of light, and pass it on as a relayed message to the brain. Joly suggests a function for a known difference in their structure. Each rod is the starting point of an extremely delicate thread which must be the channel of communication to the brain. Each cone has a stouter link with the brain, possibly consisting of a bundle of threads. He suggests that whatsoever be the quantum of energy in the electron which enters a rod, it can send only one kind of message to the brain. He supposes, therefore, that the rods are the apparatus by which messages of the presence or absence of light are received and transmitted, without distinction as to "color." But electrons entering the cones can ring up two, three or four of the fibers, according to their quantum of energy, and so send different kinds of messages corresponding with different kinds of light. By an elaborate physical argument he shows that quantums of energy would be excited in these proportions by the parts of the spectum representing the three primary colors, red, green, and blue-violet, of the Young-Helmholtz theory. If he is right, the physical structure of the eye would thus account for the manner in which the sense of vision interprets external objects as displaying sharply marked colors.

Plan to Attract Young Physicians to the Navy

By a new regulation, physicians can join the navy as surgeon lieutenants for short periods of service in the fleet, the number of junior medical officers being at present insufficient. The period of engagement is to be three years, with the option of continuing for twelve months more if required. After the first six months a temporary surgeon lieutenant will, at the discretion of the admiralty, be eligible for transfer to the permanent list of medical officers of the navy. The full pay is to be $6 a day, but no unemployed or half pay is offered. Gratuities on discharge are provided for, and in case of wounds, injury or death on duty there may be pensions or gratuities or compassionate allowances for officers or their dependents.

PARIS

(From Our Regular Correspondent)

Sept. 9, 1921.

The Microscope as an Aid in the Expert Examination of Handwriting

Writing in the *Revue scientifique*, Dr. Lefrou draws attention to the advantages (apparently neglected) that may be derived from the use of the microscope in the examination of handwriting. In the last analysis, writing must be regarded as a movement controlled by anatomic, physiologic and psychic factors, whereby every handwriting acquires characteristics in keeping with the personality of the writer. While it is true that the personal characteristics of handwriting are always observable with the naked eye, it is much more striking to note the microscopic differences. Just as two chemical substances of similar macroscopic appearance may have a different microscopic structure, so two handwritings of similar aspect may present a different microscopic image. Thus, the microscope will bring out the infinitesimal details that go to make up graphic identity. If we take a microscope of low magnification (for example, with a 2 objective and a No. 4 eyepiece, without a condenser) and lay a written sheet of paper on the stage, the transparency will usually be sufficient to cause the image to show up. It is also easy to make a sheet of paper temporarily translucent, by moistening it with a few drops of benzene or xylene, which will evaporate without injuring the document. Thus seen under the microscope, the handwriting stands out with peculiar modeling; it becomes a real picture, with inequalities in the width of the strokes and flourishes. The broad and the fine strokes, as well as the beginnings of strokes, all have their peculiar characteristics. All these peculiarities combined give to handwriting its individuality. It is easy, therefore, to understand that when dealing with false handwriting, no matter how great the skill and facility of the writer may be, he will betray his real identity by infinitesimal differences. The careful attention given to the shape of the letters will be revealed by a variation in the modeling as brought out by the microscope. If we consider, in addition, the accessory factors: the shape of the pen, the manner in which it is held, etc., we can readily imagine that all these factors will produce a different microscopic image than that of the forgery. The same argument applies to the disguising of writing. A systematic study of the modeling of the microscopic image will lead to the discovery of peculiarities, in the genuine type, of such a character that by careful inspection it will always be easy to find traces of them in the disguised writing. It should be noted that, in comparing letters, the chief attention should be directed to the most commonly used letters in the text. Some may be surprised to learn, however, that vowels are not the most commonly used letters but rather A, E, R, S, N, as can be easily verified by any text or by the excessive wear of these characters in a typewriter. The microscope discloses also erasures through the difference in tint, owing to the presence

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of a faint circle around the letter. A character written over another will show an uneven breadth or an irregular tinting of the strokes, as will be readily perceived by comparing such letters with others in the text. As is known, also photography has been employed to solve the last two problems. Dr. Lefrou believes that better results could be secured by the use of photomicrography, as the photomicrographic plate would facilitate the comparison of images and would render more tangible the data revealed by expert inspection. The study of the microscopic image of handwriting is, to be sure, a rather delicate matter, but, as Lefrou rightly states, the study of cellular morphology is even more delicate, and yet what wonderful precision we have reached in the field of histopathology. Be that as it may, it is evident from this study that the expert scrutiny of handwriting should again be classed under legal medicine, as was formerly the case. A further argument lies in the fact that the inspection of handwriting constitutes a part of the regular diagnosis in psychiatry.

Medical Fees and Successful Treatment

A physician having charged his patient 600 francs for sixty domiciliary visits, the patient offered him 100 francs in liquidation of the debt, asserting that the treatment given him had been absolutely ineffectual. The matter was brought before the civil court of the department of the Seine, which decided that a patient cannot base the remuneration to be paid a physician on the degree of success of the treatment he has received, "as it is impossible for a physician to be positive that any given treatment will bring about a given result, and that, to a certain extent, the effects of a specific medication will vary with the subjects to whom it is applied."

Death of Ernest Dupré

Dr. Ernest Dupré, professor of clinical mental and cerebral diseases in the medical department of the University of Paris, died recently in Deauville at the age of 59. He was born in Marseilles in 1862, and was appointed associate professor in 1898 and physician to the Paris hospitals in 1899. He performed also the functions of chief physician of the special infirmary connected with the prefecture of police and served as an expert to the courts. Having specialized, at the beginning of his career, in neurology and psychiatry, he succeeded Gilbert Ballet to the chair of clinical mental diseases. He had been a member of the Academy of Medicine since 1898. Besides his researches on organic psychopathy and general paresis, he studied also mental delusions, puerilism, mythomania, the emotions and their rôle in disease, the emotive constitution, etc. He also figured as an expert in many famous judicial proceedings.

VIENNA

(From Our Regular Correspondent)

Sept. 15, 1921.

The Convention of Ophthalmologists in Vienna

For the first time in seven years, an international scientific congress took place in Vienna when the ophthalmologists of nearly all civilized countries met here, August 4. Partly to celebrate the seventieth birthday of the veteran of ophthalmology, Professor Fuchs, partly to revive the international relations between scientific corporations, the Vienna Ophthalmologic Society invited the colleagues of all the world to Vienna, and countries other than England, France and Belgium sent eminent representatives. The modest means at the disposal of the inviting corporation were no obstacle to the complete success of the meeting. Forty-three extensive papers and twenty demonstrations were on the program of the convention calculated to last three days. The discussions were most enthusiastic and of a very dignified and interesting character, and the audience was always numerous.

Among the topics of the transactions, the following may be mentioned. The discussion on the problem of glaucoma on the first day proved that the old Graefe method of iridectomy is still regarded as the best treatment, while the opinions as regards the substituting methods of the last few years are rather divergent. Treatment with thyroid extract seems to be on a sound basis. Hertel of Leipzig has obtained very good results with the combination of pilocarpin externally and thyroid extract internally, while pilocarpin alone had hardly any effect in a number of cases.

Zurnedden of Düsseldorf, in his treatment of infection or of hemorrhage into the corpus vitreum by means of suction, has opened a new era in the therapy of these severe conditions. His favorable results were corroborated by the experiences of numerous other surgeons. Dr. Barraquer of Spain demonstrated his method for extracting the cataracts, which means a remarkable improvement over the routine operation. He employs an electric suction pump to remove the diseased lens. The postoperative treatment is thus materially simplified. An interesting discussion followed this paper. Drs. Gilbert of Munich and Hertel of Leipzig discussed the methods of removing iron particles from within the bulbus by introducing a strong magnet into the eye itself, thus obtaining good results, whenever the giant magnets were of no use in external application. Much interest was aroused by Dr. Larsen of Copenhagen, who is the first man to give histologic findings of the color-blind eye. He proved that the color-blind retina does not lack rods, as hitherto supposed.

Still more interest centered around a communication that was delivered by Schanz of Dresden on a new theory of vision. He was interested in the process of fluorescence of the lens and could prove that, like all other kinds of protein, also the lens is influenced by the light. The peculiar rôle of the sensitizers (chlorophyl) in the biology of light is explained by the new theory, so far as they emit electrons charged negatively whenever they absorb light. These electrons are absorbed by the proteins and produce in them definite changes. The act of vision is simply a function of such electrons. The rods in the retina cannot absorb the visible rays of light; only the pigment epithelium is able to do so. This emits under such conditions negative electrons which irritate the rods. This irritation is then transmitted to the central nervous organ. Cosmetic operations on the eye were discussed by Drs. Axenfeldt of Freiburg and Sattler of Königsberg. The first named pointed out that the colored tattooing of the transparent cornea is at times most useful, and very easy if instead of a needle a fine knife is used for that purpose; the latter has implanted fat tissue after removing the eyeball, in order to give the artificial (glass) eye a solid base and keep it at the normal level.

Syphilis of the rabbit's eye was studied by Igersheimer, who found that the spirochete is mostly located in the posterior layers of the cornea and the deposits at the back of it. Therefore he injected a new arsphenamin preparation into the anterior chamber with excellent results. He also read a paper on atrophy of the optic nerve in paresis. He could not find the spirochete in the substance of the nerve, a statement which was corroborated by Cords of Cologne, Koppanyi of Budapest and Kolmer of Vienna, who have cooperated in transplanting eyes in rats. They report that their experiments were successful in obtaining good function of the transplanted eye. The paper aroused much interest and the results were much doubted, but the method will be put to an extensive test. It is expected that it will be soon settled whether the operation can be performed with as good results as the originators state. Roentgen-ray treatment of acromegaly and papillitis caused by tumors of the hypophysis or of the chiasm was strongly recommended by Müller and Czepa instead of operative interference. They have obtained disappearance of the headache after the first dose, and the

symptoms soon disappeared also. Seven cases have been treated by them in that way. Combination with iodin was advised by Szilyi, while Schüller would not dispense with operation in all cases in which vision is severely affected. Other interesting papers were read by Gopin of Lausanne, Hagen of Norway, Maggiore of Rome and Marquez of Spain, partly topics of general interest, partly special subjects. The after-care of the war blind and their reeducation was dealt with in a number of papers. It was pointed out that the mentality of many of these unhappy victims seems to have suffered both from the shock of the injury and the psychic effects of blindness. Cooperation of the state and scientific circles is necessary to alleviate the situation of these numerous patients and to regain them for useful work in human society. The members of the congress were, of course, the objects of numerous attentions and honors. Apart from social entertainments by the municipality and the state, many corporations and health resorts in the vicinity of the capital invited the doctors to visit their institutions. Thus an excursion to the Semmering and to Baden was arranged, where the hydrotherapy and the sulphur springs were much admired by the visitors. In the toasts and speeches, representatives of the foreign learned societies laid stress on the fact that the interrupted international scientific relations must be restored to their former strength as soon as possible for the mutual benefit of all concerned.

Retirement of Professor Chvostek

To the great surprise of the medical circles, Professor Chvostek, the neurologist and professor of medical pathology, has announced his intention to retire from clinical life, and his clinic is not to have any successor. The reasons for this decision remain a mystery. The government seems to have wronged the scientist in some way and seizes the opportunity to reduce expenses by closing the clinic and thus reducing the number of internal clinics to two (Ortner's and Wenckebach's clinics). Attempts are being made to dissuade him, and the government is being urged to use its influence in the same direction. Chvostek is an excellent teacher, much beloved by students and patients, and his retirement would mean a real loss to the university, especially as he is still a vigorous man with a speculative turn of mind, walking untrodden paths which still hold out a promise for unexpected discoveries in medicine.

Marriages

RICHARD OWEN O'DELL, South Charleston, W. Va., to Miss Edna M. Spath of York, Pa., at Wheeling, W. Va., September 1.

GEORGE ARMADALE TOWNSEND, Chico, Mont., to Miss Huldah Nordstrom of Sacred Heart, Minn., September 24.

REUBEN J. ERICKSON, Cincinnati, to Miss Dorothy Dohme of Baltimore, at Blue Hill, Maine, September 17.

MANLEY BRONSON ROOT, Utica, N. Y., to Miss Dorothy Grace Hammond of Elmira, N. Y., September 23.

FRANCIS CARILLO TYNG, Capt., M. C., U. S. Army, to Lillian, Baroness of Rohden, at Luxembourg, August 27.

HARRY A. JOHNSON, Las Vegas, Nev., to Miss Maude L. Morrissey of Alta, Iowa, September 17.

A. GRAHAM BIDDLE, New York, to Miss Charlotte A. Meier of Philadelphia, September 19.

ELWOOD BEST LYNCH to Miss Lurah M. Wynkoop, both of Leadville, Colo., August 31.

DAVID KAPLAN, Chicago, to Miss Fara F. Seewald of Terre Haute, Ind., September 21.

JOSEPH M. KNOCHEL, Lincoln, Ill., to Miss Loretta Springer of Chicago, in September.

EDWARD KUCK, Cincinnati, to Miss Margareta Wuenker in Cincinnati, September 14.

Deaths

Pierre Isadore Leonard ● St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1884; Bellevue Hospital Medical College, New York, 1885; postgraduate course, University of Vienna, 1890; Capt., M. C., U. S. Army, during the World War, discharged, November 30, 1918; for twenty years professor of ophthalmology, otology and pathology, Ensworth Medical College; editor of the Ensworth Medical Herald; served as councilman for St. Joseph, 1906-1908; former president of the Buchanan County Medical Society; died, September 12, following a long illness, aged 59.

Walter Douglas Hoskins, Indianapolis; Medical College of Indiana, Indianapolis, 1894; member of the Indiana State Medical Association; member of the Central States Pediatric Society; lecturer on diseases of children at his alma mater; associate in pediatrics, Indiana University School of Medicine, Indianapolis; died recently at the Methodist Hospital, Indianapolis, aged 50.

John C. Kendall, Norfolk, Conn.; College of Physicians and Surgeons (Columbia University), New York, 1875; member of the Connecticut State Medical Society; also a dentist; formerly on the staff of the Bellevue Hospital, New York; died, September 17, at the Litchfield County Hospital, Winsted, Conn., following a short illness, aged 74.

Pierre A. Hilbert ● Melrose, Minn.; University of Minnesota, Minneapolis, 1893; member of the State Board of Control; member of the state legislature, 1914; former member of the state board of medical examiners; head of the Melrose Hospital; died, September 23, at the Miller Hospital, St. Paul, after a short illness, aged 56.

Henry Herbert Thompson ● Noblesville, Ind.; Medical Department of Washington University, St. Louis, 1905; specialized in surgery; former health officer of the city; served as major during the late war, and in France as sanitary inspector; died, September 21, from pleuropneumonia, aged 43.

Flavius J. Groner, Grand Rapids, Mich.; University of Michigan, Ann Arbor, 1880; for ten years surgeon at the former Mercy Hospital, Big Rapids; consulting surgeon at St. Mary's Hospital, Grand Rapids; member of the Grand Rapids Academy of Medicine; died, September 13, aged 72.

Vivian Russell Pennock ● Longmont, Colo.; University of Colorado, Denver, 1894; vice president of the Longmont Hospital; at one time member of the state board of health; served, M. C., U. S. Army, during the World War; died, August 19, from carcinoma of the stomach, aged 51.

William James Conklin ● Fishkill, N. Y.; Medical Department of the City of New York, 1870; formerly consulting physician to the Highland Hospital, Matteawan; head of the Public Service Corporation of Beacon, N. Y.; died, September 27, from heart disease, aged 75.

Benjamin F. Milington, South Londonderry, Vt.; University of Vermont, College of Medicine, Burlington, 1886; died suddenly, September 21, following an operation for the relief of intestinal obstruction, at the Memorial Hospital, Brattleboro, Vt., aged 61.

Silas Dinsmoor, Pittsburgh, Pa.; Kentucky University, Medical Department, Louisville, 1906; for ten years member of the faculty of the University of Missouri, Columbia; died, September 18, in a local sanatorium, from injuries received in a fall, aged 69.

William George Carleton, Dadeville, Ala.; Vanderbilt University, Nashville, Tenn., 1882; member of the Medical Association of the state of Alabama; probate judge of Tallapoosa County; died, September 18, following a long illness, aged 63.

William H. Axline, Fairfield, Iowa; College of Physicians and Surgeons, Keokuk, 1869; practitioner for over half a century; veteran of the Civil War; died suddenly, September 12, at Attica, Iowa, from cerebral hemorrhage, aged 75.

Waldo B. Merriman, Centerburg, Ohio; Long Island College Hospital, Brooklyn, 1878; professor of physiology, Ohio State University, Columbus, September 14, at the Grant Hospital, Columbus, following an operation, aged 65.

Joseph August O'Leary ● Wakefield, Mass.; Boston University, School of Medicine, 1887; postgraduate course at Harvard University, Boston; member of the board of health, 1889-1895; died, September 21, aged 60.

● Indicates "Fellow" of the American Medical Association.

John Augustus Sanders, Herndon, W. Va.; Medical College of Virginia, Richmond, 1917; was instantly killed, when the automobile in which he was riding skidded down an embankment at Huntington, aged 32.

Charles Babson Hopkins, Kansas City, Mo.; Rush Medical College, Chicago, 1900; Captain, M. C., U. S. Army, during the World War, discharged, April, 1919; died, September 13, at Monrovia, Calif., aged 45.

Robert Ewing McKenzie ● Gilman, Ill.; Washington University Medical College, St. Louis, 1899; died, September 15, at the Brokaw Hospital, Bloomington, Ill., from chronic nephritis, aged 44.

Edward Leander Hills, Center, N. D.; Rush Medical College, Chicago, 1879; died, September 19, from chronic nephritis, at the Mandan Deaconess Hospital, Mandan, N. D., aged 67.

George Wallace Bell, Chico, Calif.; American Medical College, St. Louis, 1892; formerly a physician of Okmulgee, Okla.; died, September 16, at the Enloe Hospital, Chico, aged 62.

George W. Kirkpatrick, Lafayette, Ind. (licensed, Indiana, 1897); served as surgeon in the Civil War; practitioner for over half a century; died, September 22, from heart disease, aged 86.

Alfred J. Dake, Viola, Wis.; Hahnemann Medical College and Hospital of Chicago, 1894; village president, and for nine years member of the school board; died, September 16, aged 52.

William Wycoff Stevenson, Trenton, N. J.; University of Pennsylvania, Philadelphia, 1912; formerly on the staff of the New Jersey State Hospital, Trenton; died, July 18, aged 31.

Lester Cross Pratt ● Bellefontaine, Ohio; Jefferson Medical College, Philadelphia, 1883; died, September 19, in a local hospital, from obstruction of the gallbladder, aged 61.

H. G. Monk, Trenton, N. C.; Medical College of Virginia, Richmond, 1896; member of the Medical Society of the State of North Carolina; died in July, from mitral disease, aged 50.

Ivan J. Siekmann ● New Orleans; Tulane University of Louisiana, School of Medicine, New Orleans, 1892; also a druggist; died, September 10, from heart disease, aged 59.

James P. Hayes, Baker, Ore.; University of Louisiana, New Orleans, 1878; died in the Sacred Heart Hospital, Medford, Ore., September 11, from spinal thrombosis, aged 71.

Willard G. Piersol, Lee, Ill.; University of Wooster, Medical Department, Cleveland, 1877; died, September 16, at the home of his sister, from cerebral hemorrhage, aged 72.

Thomas Chalmers Johnson, Florence, S. C.; Medical College of the State of South Carolina, Charleston, 1904; died, September 18, from heart disease, aged 42.

Charles A. Casgrain, Fall River, Mass.; Laval University, Faculty of Medicine, Quebec, 1874; practitioner for nearly fifty years; died, September 12, aged 72.

John Milton Gambill ● Centralia, Ill.; University of Michigan, Ann Arbor, 1912; specialized in pediatrics; died, September 13, from arteriosclerosis, aged 46.

William James Crosland ● Bennetsville, S. C.; Medical College of the State of South Carolina, 1898; died in September, from lymphosarcoma, aged 48.

Burton Hodges, Detroit; Michigan College of Medicine and Surgery, Detroit, 1894; member of the Michigan State Medical Society; died, September 2.

August V. de Bacher, St. Mary's, Kan.; John A. Creighton Medical College, Omaha, 1896; died, July 22, from cerebral hemorrhage, aged 60.

Wilfred Bernard Cunningham ● Mamaroneck, N. Y.; Medical School of Harvard University, Boston, 1903; died, September 12, aged 42.

Aaron Tilzer ● Portland, Ore.; University of Oregon, Portland, 1897; specialized in dermatology; died in September, aged 56.

William L. Fitts ● Carrollton, Ga.; Atlanta Medical College, 1883; died, September 8, at an Atlanta sanatorium, aged 58.

Sarah H. Perry ● Rochester, N. Y.; University of Buffalo, 1882; died, September 9, following a lingering illness, aged 74.

Willis Lee Herrod, Cabot, Ark.; University of Arkansas, Little Rock, 1891; died, August 28, aged 58.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

TOXICIDE

Report of the Council on Pharmacy and Chemistry

The Council has authorized the publication of the following report.

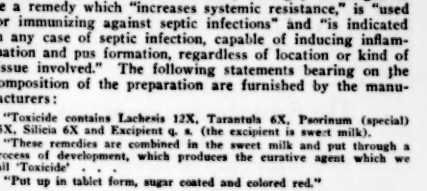
W. A. PUCKNER, Secretary.

Toxicide (Toxicide Laboratories, Chicago) is alleged to be a remedy which "increases systemic resistance," is "used for immunizing against septic infections" and "is indicated in any case of septic infection, capable of inducing inflammation and pus formation, regardless of location or kind of tissue involved." The following statements bearing on the composition of the preparation are furnished by the manufacturers:

"Toxicide contains Lachesis 12X, Tarantula 6X, Psorinum (special) 15X, Silicia 6X and Excipient q. s. (the excipient is sweet milk).

"These remedies are combined in the sweet milk and put through a process of development, which produces the curative agent which we call 'Toxicide' . . .

"Put up in tablet form, sugar coated and colored red."


If You Are Sick and Discouraged
and have about given up all hope of ever being well again, come and tell me about it.
30 Years of Careful Practical Experience
have taught me how to treat you and if you follow my advice you will not be disappointed in any promise I make you. No matter what your complaint may be, come and tell me about it confidentially and your confidence will be respected. If I cannot help you I will not take your money.
Office Hours: 9 to 12 a. m., 1:30 to 5 and 7 to 8:30 p. m. Sunday by appointment.
J. F. RUCKEL, M. D.
Tel. Normal 4001
6306 Halsted Street

Photographic reproduction (reduced) of an advertisement of the "originator" of Toxicide; it ran for many months in the program of a burlesque theater located in Ruckel's neighborhood.

No information is given as to the proportions, either relative or actual, of the ingredients. Neither is any information given regarding the "process of development" to which the mixture is subjected, nor the amount of the finished mixture which is contained in Toxicide tablets.

The Toxicide Laboratories present the following "theory":

"In combining these remedies and processing with milk, we develop a latent immunizing active principle, which usually controls the most virulently, active, septic infections promptly."

There is no evidence, however, that any effort has been made to demonstrate the presence of a "latent immunizing active principle" by scientific methods of modern immunology. The following claims for the use of Toxicide appear on the label:

"Acne, boils, carbuncles, furuncles and abscesses of the most virulent types usually begin to show improvement within 4 to 12 hours after beginning administration.

"In badly infected wounds, Toxicide will check the further destruction of live tissue and should always be given for a few days before and after operations on pus cases.

"For gunshot wounds and other conditions difficult to sterilize or drain, Toxicide is the ideal remedy.

"For abscesses existing or threatened in any obscure location, the middle ear, the mastoid, the frontal or any accessory sinuses, Toxicide is of inestimable value.

"If administered early, in fractures, compound or simple, or for laceration and other injuries, inflammation, swelling, soreness and destruction of tissue will be greatly mitigated."

In support of these claims there are offered letters from physicians who have used Toxicide with good results. None of these testimonials present evidence that the reported effects were due to Toxicide. The asserted—and highly improbable—action of Toxicide could be determined only by an extensive series of carefully controlled clinical trials—and such

evidence is entirely lacking. In fact, the claims appear to have no better basis than the coincidence which is stated to have led to the discovery of the "remedy"; namely, that a boil on the neck disappeared shortly after the administration of Toxicide!

The Council finds Toxicide inadmissible to New and Non-official Remedies because (1) the identity and amount of the potent constituent or constituents have not been furnished; (2) the preparation is advertised indirectly to the public; (3) the name "Toxicide" is therapeutically suggestive, and (4) the therapeutic claims, being unsubstantiated by evidence, are unwarranted.

[Editorial Comment.—It seems rather preposterous that a scientific body, such as the Council on Pharmacy and Chemistry, should have to waste its time in investigating and reporting on such an obviously unscientific product as "Toxicide." So long, however, as there are physicians who will take preparations of this sort seriously, the Council feels that it is its duty to report on such products. The problem, in

TOXICIDE

The Remedy that saves Life and Limb

The principal action of Toxicide is to immediately neutralize against the toxic and irritant properties of decomposing organic matter, which it seems to do almost perfectly, even though sepsis has become well established. It also prevents inflammation, tenderness and death of bruised and lacerated tissues, whether infected or not.

If administered early in case of [illegible] compound or simple, including severe bruises, lacerations or other injuries, little [illegible] pain or swelling will develop and no infection will take place.

In case of badly infected wounds with or without sloughing, it will stop the further destruction of live tissue so quickly that you cannot believe without a demonstration. All dead matter will slough away or be absorbed but no scars will be.

Many lingered arms and legs that are now being mutilated could easily be saved if Toxicide were administered, as it precludes all danger from infection and prevents breaking down of the bruised and lacerated tissues.

Toxicide should always be given for a few days before and after operating on any cases. It also does much toward preventing shock and sepsis in major operations. Try some and be an enthusiast about drainage if Toxicide is used for the reason that the discharges will practically lose its virulent nature besides all the live tissue will be practically immune to infection.

DOSE

Our tablet every hour until improvement sets in, then gradually reduce the frequency of the dose.

CAUTION. When Toxicide has accomplished its work, discontinue, otherwise it will so thoroughly destroy all irritants that granulating and healing of the wound will be retarded. (Do not use in Syphilis. Rule before opening for it has no action on Syphilis but will retard suppuration.)

For further particulars, address

DR. J. F. RUCKEL

6300 South Hohman Street, Chicago, Ill.

Phone Normal 4001

Who originated the remedy sixteen years ago and has since used it in more than 1,000 cases with marvelous results.

Toxicide has no action on the pneumococci but is helpful in mixed infections where there is much pain and swelling. Has not been used for cancer but probably will be useful. Would suggest a trial.

Gunshot wounds and other conditions difficult to sterilize or drain, offer a field of great importance.

For an abscess existing or threatened in the frontal sinuses or in the ear or any other observed or dangerous location it is of inestimable value. If Toxicide is administered within a reasonable time there will be no need for a mastoid operation, but if late after an operation has become necessary the opening need not be extensive for the discharge will cause very little.

Toxicide has been used with remarkable results to help joint disease and in tubercular conditions of the bowels. In fact it is useful wherever there is a tendency to pus formation regardless of the location involved.

If possible administer early in appendicitis, it will often prevent the necessity for an operation. In case the operation becomes necessary Toxicide lessens the tendency to shock and peritonitis.

Boils, pimples, carbuncles, and abscess are controlled so promptly and positively that neither you or I would believe without seeing.

Toxicide has produced wonderfully beneficial results in puerperal septicemia, also in peritonitis from appendicitis or following abdominal operations, it also does much to prevent shock following major operations.

Fig. 1—Photographic reproduction (greatly reduced) of an advertising circular used some time ago describing the marvels (alleged) of Toxicide.

fact, was well stated in a letter addressed to the editor some months ago by the secretary of a county medical society who had just received a visit from a representative of the Toxicide Laboratories and who sent to The Journal some of the advertising matter that he had received from the same source. This physician wrote:

> "I do not wish to trouble you with this kind of material, usually deposited safely in my waste paper basket, but the enclosed was handed to me today by a 'bird' who is calling on all the doctors and making strong statements. When he claimed that 'Toxicide' is being used in the Presbyterian Hospital, Chicago, and that the Council on Pharmacy is considering it seriously, etc., etc., I wish to know whether I am missing any real good thing. If it has any real virtue, I would like to know about it, but if it has not, it seems to me that something ought to be done to head him off as some doctors are sure to fall for some of it."

The Toxicide Laboratories is, apparently, merely a trade name used by the alleged originator of "Toxicide," J. F. Ruckel, M.D. According to our records, Ruckel was born in 1860 and was graduated by the Chicago Homeopathic Medical College in 1886. He claims to have originated Toxicide about twenty years ago and to have prescribed it "in over 3,000 cases." In addition to Toxicide, the Toxicide Laboratories also put out "Dianasiac for Nymphomania and Satyriasis" and "Somnosine for Insomnia."]

Correspondence

THE GENERAL HOSPITAL AND ITS NECROPSY PERCENTAGE

To the Editor:—It is interesting as well as encouraging to note that, included in the standards promulgated by the American College of Surgeons and the American Hospital Association, there is a requirement that hospitals, to receive a creditable grade, must show that the resident staff has opportunity to follow to the postmortem room a fair percentage of the patients dying in their wards.

A study of the postmortem percentage from many of the large public or semipublic hospitals reveals many pitifully low averages. To me there appears but little excuse for such a condition, which, when present, usually signifies that either the medical administrator does not deem the question of attempting to make clinical studies more nearly conform with postmortem findings one of importance, or that he is not using the proper methods in obtaining postmortem examinations.

There is no type of hospital in which it is more difficult to secure a large postmortem percentage than in a municipal institution. Nor is it fair to compare the percentage of a private or semiprivate hospital, which can require a signed postmortem permission before admitting its patients, with that of a large municipal institution, where admissions cannot, or should not, be refused.

The association of undertakers, in almost every community, is the chief stumbling block in the path of the routine procuring of permissions for necropsies. I was recently requested to address such an association, and found the members surprisingly reasonable and willing to cooperate. At this meeting it was requested that:

1. The pathologist should leave the vessels, which are usually used by the embalmer, long, wherever possible, especially the vessels of the neck and the upper extremities, and, if possible, should not sever them completely from a portion of the arch of the aorta, to prevent retraction. The iliac vessels should preferably be left long, but, if this is not possible a long ligature should be attached, so that these vessels could be easily located.

2. At death the nurse should be instructed to lift the head, so that proper drainage can be secured.

3. Reasonable care should be taken to prevent leakage, when an examination of the brain and cord is included in the postmortem permission.

It would seem desirable that a conference between physicians of the hospital, interested in securing postmortems, and the undertakers' association, be arranged in every community. A spirit of cooperation with the undertakers, on the part of the hospital, will go far toward lessening the antagonism which exists everywhere. The hospital is frequently to blame for much of this feeling, because of the careless and inefficient way in which bodies are prepared for delivery to the undertaker. It seems that every hospital should show the same attention to detail in the care of the deceased as they showed to the patient prior to death.

There are many other means which the hospital administrator may adopt in procuring postmortem permissions. In the laboratories of the Philadelphia General Hospital a room has been set aside, which may be used by the undertaker in embalming a body which is to be shipped some distance, or

for any other special case where the time of the undertaker can be saved by preparing the body at the hospital. There is also a room which can be used for funeral services, provided the family or the undertaker so request. Each incoming intern at the Philadelphia General Hospital is carefully told of the various arguments to be used in procuring necropsies. Not only are these arguments mentioned, but the specific cases in which each individual argument is indicated are set forth. A competitive necropsy percentage list not only of interns, but also of departments and visiting chiefs, is published each month.

Below is given a monthly statement of the postmortem percentages from July, 1920, to July, 1921, inclusive, showing what can be done in securing postmortem permissions in a hospital of 2,000 beds, if time and energy are given to it:

	Necropsies	Percentage
July, 1920	40	32.26
August, 1920	46	32.62
September, 1920	36	31.30
October, 1920	40	33.90
November, 1920	41	30.36
December, 1920	41	26.97
January, 1921	66	38.15
February, 1921	62	41.89
March, 1921	55	31.97
April, 1921	61	42.07
May, 1921	54	36.73
June, 1921	59	40.97
July, 1921	52	42.62

General average for the thirteen months, 35.47 per cent.

It does not appear that a hospital has any right to receive interns for training unless there are adequate opportunities for these physicians to make clinical-pathologic studies on at least 25 per cent. of the patients dying in their wards.

J. C. DOANE, M.D., Philadelphia.
Medical Director, Philadelphia General Hospital

"PROBLEM OF THE NARCOTIC ADDICT"

To the Editor:—In THE JOURNAL, June 4, 1921, p. 1551, there is an article entitled "The Problem of the Narcotic Drug Addict," by Alfred C. Prentice, A.M., M.D.

On page 1553 the author goes out of his way to attack a certain number of journals, among which is the *American Journal of Public Health*, charging them with publishing "significant articles of a sensational character . . ." etc.

I have delayed calling your attention to this article until I could correspond with Dr. Prentice and obtain from him, as far as the *American Journal of Public Health* is concerned, references to the articles which he so characterized.

I have carefully read all the articles in the *American Journal of Public Health* referred to, and for it alone I am speaking. I wish emphatically to deny the truth of Dr. Prentice's statements as far as this journal is concerned. It is perfectly true that the committee reports on this question, as well as articles which have been published, have taken a different point of view from that held by Dr. Prentice.

In broadness of view, in consideration of the opinions of others, and in fair mindedness they present a contrast to the article of Dr. Prentice, which is as marked as it is pleasing. There is no trace of sensationalism in any article published in the *American Journal of Public Health*.

MAZYCK P. RAVENEL, M.D., Columbia, Mo.
[President, American Public Health Association.]

Typhoid Is Disappearing.—No human disease offers greater promise of eventual complete disappearance than does typhoid fever, and this disappearance is taking place through the application of the knowledge which we are so rapidly gaining as to the mechanism of this disease, or, more important, as to the life cycle of its parasitic agent within and without the body.—*Bull. Mass. Dept. Ment. Dis.* **4**:7 (Oct.) 1920.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DETECTION OF METHYL ALCOHOL

To the Editor:—Kindly publish methods to detect methyl alcohol in any mixture for drinking purpose. Also best references on that subject. Please do not publish my name.

P. S., Dixmont, Pa.

ANSWER.—There are a number of tests for methyl alcohol ("methanol"). Many are not reliable for relatively small amounts of the substance. A qualitative test which can be applied quickly is that of Mullikin and Scudder, slightly modified, which, however, is accurate only for liquids containing 10 per cent. or more of methyl alcohol:

Oxidize 10 c.c. of the liquid (diluted to contain not over 12 per cent. alcohol) in a test tube as follows: Wind copper wire 1 mm. thick upon a rod or pencil to form a closed coil 3.5 cm. long, with a stem about 20 cm. long. Heat the coil in the upper or oxidizing flame of a Bunsen burner. Plunge the hot coil to the bottom of the test tube containing the alcohol in order to oxidize any methyl alcohol to formaldehyd. Repeat the operation from three to five times (at this point formaldehyd may be detected by the odor if in sufficient quantity). Cool the test tube and test contents for formaldehyd as follows:

Pour the colorless filtrate into a porcelain casserole, and add 10 c.c. each of water, fresh milk and commercial hydrochloric acid solution (so-called "muriatic acid," which contains ferric chlorid as an impurity). Heat the mixture to boiling, with constant agitation. A bright permanent pink color will occur if formaldehyd is present, indicating the presence of methyl alcohol in the original solution.

For accurate determinations, it is necessary to purify the liquid first in order to remove substances which might interfere. The usual procedure is to add solid sodium carbonate or sodium hydroxid until distinctly alkaline, then distil over about one half or three fourths of the original volume of the liquid. The distillate can then be used for testing, though it is better for delicate work to redistil without addition of alkali, employing the second distillate. Then the Denigé test, as improved by Elvove, and by Chapin (*J. Indust. & Engin. Chem.* **13**:543 [June] 1921) may be applied as follows:

Dilute the liquid so that it will not contain more than 5 per cent. of alcohol (ethyl and methyl). Transfer 5 c.c. of the purified liquid to a test tube; add 0.3 c.c. of phosphoric acid U. S. P.; mix; add 2 c.c. of potassium permanganate solution, 3 per cent., mix and allow to stand for about ten minutes. Then add 1 c.c. of oxalic acid solution, 10 per cent., and allow the mixture to stand until it assumes a clear brown coloration (about two minutes). Add 1 c.c. of sulphuric acid U. S. P., agitate, then pour in the tube 5 c.c. of the fuchsin-sulphurous acid test solution or, better, the Schiff-Elvove reagent (described by Elvove, Elias: Detection and Estimation of Small Amounts of Methyl Alcohol, *J. Indust. & Engin. Chem.* **9**:295 [March, 1917] and immediately mix well. After standing ten minutes, the solution should show no distinct blue or violet coloration, but should be colorless or a pale greenish tint; this shows the absence of more than 0.2 per cent. methyl alcohol.

Other tests of a satisfactory nature appear in the article by Ziegler in this issue of THE JOURNAL, p. 1160. A comprehensive review of tests for methyl alcohol was published by A. O. Gettler in the *Journal of Biological Chemistry* **42**: 311 [June] 1920.

CHOCOLATE DIPPERS' DERMATITIS

To the Editor:—Please inform me of the proper treatment for the dermatitis developing on the fingers of persons employed as chocolate dippers in a candy factory. It is a papulovincular rash limited to the exposed parts, and appears in practically all of those thus employed. Please omit my name.

J. S.

ANSWER.—Chocolate dippers' dermatitis is referred to by many writers on industrial dermatoses. Sometimes it is merely a sugar dermatitis, and at other times it is apparently due to a susceptibility to chocolate itself so that there is a specific irritation. The only successful way of getting rid of it is to avoid the irritant.

PREVENTIVE OF COLD FINGERS IN DRIVING

To the Editor:—The suggestion of Dr. Harry W. Davis, Plains, Kansas, in THE JOURNAL last week for preventing cold fingers in driving by placing fur on the steering wheel is an excellent one. I have used a three-inch strip of sheepskin with the wool out wrapped around the wheel for the past ten years. May I also suggest that a sheep pelt on the seat with the wool up will be appreciated during cold weather.

W. C. HANSON, M.D., Racine, Wis.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 8-9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville; Sec., Homeo. Bd., Dr. Geo. M. Love, Rogers; Sec., Eclectic Bd., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith.

CALIFORNIA: Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 135 Stockton St., San Francisco.

CONNECTICUT: Hartford, Nov. 8-9. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford.

CONNECTICUT: New Haven, Nov. 8. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

FLORIDA: Tallahassee, Oct. 11. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.

GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 11. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.

ILLINOIS: Chicago, Oct. 19-22. Director, Mr. W. H. H. Miller, Springfield.

IOWA: Des Moines, Nov. 1-3. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.

MAINE: Portland, Nov. 8-9. Sec., Dr. Frank W. Searle, 775 Congress St., Portland.

MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.

MISSOURI: Kansas City, Oct. 10-12. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.

NEBRASKA: Lincoln, Nov. 9. Sec., Mr. H. H. Antles, Capitol Bldg., Lincoln.

NEVADA: Carson City, Nov. 7. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.

OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.

PHILIPPINE ISLANDS: Manila, Oct. 11. Sec., Dr. Fortunato Pineda, 612 Rizal Ave., Manila.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Dallas, Nov. 15-17. Sec., Dr. T. J. Crowe, 918-19 Dallas County Bank Bldg., Dallas.

WEST VIRGINIA: Clarksburg, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.

New York January Examination

Mr. Herbert J. Hamilton, assistant, professional examinations, New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 24-27, 1921. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 155 candidates examined, 113 passed and 42 failed. The following colleges were represented:

College	PASSED Year Grad.	Number Licensed
University of Colorado	(1919)	1
Yale University	(1919), (1920)	2
Georgetown University	(1920)	1
Howard University	(1920)	1
Rush Medical College	(1917)	1
University of Illinois	(1920)	1
Tulane University	(1916)	1
Johns Hopkins University	(1918)	1
University of Maryland	(1915), (1920, 2)	3
Boston University	(1920)	1
Harvard University	(1914), (1916), (1917), (1919, 2)	5
Tufts College Medical School	(1913), (1917)	2
Albany Medical College	(1914), (1918)	2
Columbia University	(1915), (1917), (1918), (1919, 2) (1920, 14)	19
Cornell University	(1920)	2
Fordham University	(1918), (1920, 7)	8
Long Island College Hospital	(1919, 2) (1920, 7)	9
New York Homeopathic Medical College and Flower Hospital	(1915), (1916), (1918, 3) (1919), (1920, 6)	12
Syracuse University	(1920)	2
Univ. and Bellevue Hospital Med. College	(1920)	7
University of Buffalo	(1920)	3
Eclectic Medical College, Cincinnati	(1920)	2
Hahnemann Med. Coll. and Hospital of Philadelphia	(1920)	2
Jefferson Medical College	(1915), (1919, 2), (1920, 2)	5
University of Pittsburgh	(1916), (1919)	2
Woman's Medical College of Pennsylvania	(1917), (1918)	2
University of Vermont	(1911), (1916), (1918), (1919)	4
McGill University	(1915), (1917), (1918)	3
Queens University	(1913)	1
University of Toronto	(1910), (1917)	2
Royal College of Surgeons, England	(1918)	1
University of Budapest	(1911),* (1913)*	2
Medical School of American University of Beirut	(1907),* (1912)*	2
University of Vienna	(1907)*	1

College	FAILED	
University of Alabama	(1911)	1
College of Physicians and Surgeons, Chicago	(1902)	1
University of Louisville	(1914)	1
Boston University	(1906)	1
Tufts College Medical School	(1914), (1916), (1919)	3
Detroit College of Medicine and Surgery	(1919)	1
University of Michigan Medical School	(1918)	2
John A. Creighton Medical College	(1916)	1
University of Nebraska	(1918)	1
Albany Medical College	(1916)	1
Columbia University	(1919), (1920)	2
Fordham University	(1920)	1
New York Homeopathic Medical College and Flower Hospital	(1916, 2), (1918, 2)	4
University and Bellevue Hosp. Med. College	(1908), (1920,2)	3
University of Buffalo	(1920)	2
Hahnemann Medical Coll. and Hosp. of Philadelphia	(1920)	1
Jefferson Medical College	(1913)	1
Medico-Chirurgical College of Philadelphia	(1916)	1
University of Pennsylvania	(1919), (1920)	2
Vanderbilt University	(1913)	1
Baylor University	(1920)	1
University of Vermont	(1916)	1
Queens University	(1920)	1
University of Toronto	(1919)	1
Bohemian University of Prague	(1898)*	1
University of Munich	(1911)*	1
University of Budapest	(1909),* (1915)*	2
University of Naples	(1906)*	1
University of Bogota	(1909)*	1
Osteopath		1

Mr. Herbert J. Hamilton also reports that from March 16, 1921, to July 20, 1921, 18 candidates were licensed by endorsement of credentials, and 15 candidates' licenses were endorsed on account of eminence and authority in the profession. The following colleges were represented:

College	ENDORSEMENT OF CREDENTIALS Year Grad.	Endorsement with
Chicago College of Medicine and Surgery	(1911)	Illinois
Bennett Medical College	(1913)	Illinois
Northwestern University	(1920)	Illinois
Rush Medical College	(1910)	Illinois
University of Illinois	(1915)	Illinois
Indiana University School of Medicine	(1918)	Indiana
Harvard University	(1894)	California
University of Michigan Medical School	(1915)	Indiana
St. Louis University School of Medicine	(1908)	Illinois
Ohio State University College of Medicine	(1918, 2)	Ohio
Jefferson Medical College	(1914) California; (1918)	New Jersey
Medico-Chirurgical College of Philadelphia	(1916)	New Jersey
University of Virginia	(1919)	Virginia
University College of Medicine	(1903)	Virginia
Medical College of Virginia	(1918)	Virginia
University of Toronto	(1911)	Indiana

College	ENDORSEMENT OF LICENSES	
University of Alabama	(1914)	Georgia
George Washington University	(1906)	N. Carolina
State University of Iowa College of Medicine	(1915)	Iowa
Johns Hopkins University (1912) Maryland, Massachusetts	(1904)	Maryland
University of Maryland	(1903)	Montana
Boston University	(1906)	Mass.
University of Michigan Medical School	(1904), (1906), (1908), (1915)	Michigan
Hahnemann Med. College and Hosp. of Philadelphia	(1901)	Penna.
McGill University	(1895)	Canada
School of Medicine of Caracas	(1895)*	Porto Rico

* Graduation not verified.

New Mexico July Examination

Dr. R. E. McBride, secretary, New Mexico State Board of Medical Examiners, reports that 7 candidates were licensed by reciprocity at the meeting held at Santa Fe, July 11-12, 1921. The following colleges were represented:

College	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Hahnemann Med. College and Hospital of Chicago	(1914)	Iowa
Indiana University School of Medicine	(1920)	Indiana
Kansas Medical College, Topeka	(1904)	Kansas
Kansas City Medical College	(1902)	Kansas
Western Reserve University	(1888)	Ohio
Jefferson Medical College	(1896)	Iowa
University of Tennessee	(1905)	Kentucky

Hawaii July Examination

Dr. Guy C. Milnor, Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, July 11-14, 1921. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. Of the 5 candidates examined, 4 passed and 1 failed. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
College of Medical Evangelists	(1916)	76, 79
St. Louis University School of Medicine	(1920)	76
Medical College of the State of South Carolina	(1916)	85
FAILED		
Jefferson Medical College	(1893)	47

Book Notices

CLINICAL METHODS. A Guide to the Practical Study of Medicine. By Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital, and Harry Rainy, M.D., F.R.C.P., F.R.S.E, Physician to the Royal Infirmary, Edinburgh. Seventh edition. Cloth. Price, $4.50. Pp. 685, with 173 illustrations. New York: Paul B. Hoeber, 1921.

That there is need of such a book is shown by the fact that the book has gone through several editions. Among the more important additions made in this edition are: the examination of the heart, especially by the electrocardiograph; examination of the urine in kidney functional tests, and plates showing changes in the fundus of the eye and changes in the tympanic membrane of the ear. The purpose of the book as given by the authors is to provide the answer to the question: How shall I investigate this case? The first chapter deals with case taking, and includes a general scheme for the investigation of any case. This seems especially adapted to the beginner by giving a concise and logical procedure which insures that no points of importance in the case are overlooked. The remainder of the book applies this method to the various systems of the body. The chapter on the clinical examination of children contains some valuable suggestions on methods of procedure. The method of estimating and calculating the number of cells in the blood is not given in the simplest manner. Such types of streptococci as *Streptococcus erysipelatosus* and *Streptococcus rheumaticus* are described, while it is suggested that there may be types of pneumococci. The style is clear and concise, and the various tests are generally accepted ones. The book seems especially adapted for those who have no system of examination and those who wish to make use of the more recent laboratory tests.

HANDBUCH DER SEXUALWISSENSCHAFTEN MIT BESONDERER BERÜCKSICHTIGUNG DER KULTURGESCHICHTLICHEN BEZIEHUNGEN. Unter Mitwirkung von Dr. Med. et Phil. G. Buschan, Havelock Ellis, Professor Dr. Sexed Ribbing, Dr. R. Weissenberg, und Professor Dr. K. Zieler. Herausgegeben von Dr. Albert Moll, Geh. Sanitätsrat. Paper. Price, 120 marks. Pp. 1046, with 429 illustrations. Leipzig: F. C. W. Vogel, 1921.

The first edition of this encyclopedia of sexual knowledge was issued in 1911. Dr. Moll indicates in the new edition that it is merely a reprinting of the old one. The conditions during the last few years have not permitted any complete revision, nor has this been necessitated by any change in the point of view concerning any of the problems discussed. There have been added, however, sections relating to statistics regarding the employment of women physicians, police regulations for the control of prostitution, and a discussion of so-called "puberty glands." The original volume includes 1,000 pages covering every aspect of sex, the contributors including, among others, Havelock Ellis, Weissenberg, Buschan, Sexed Ribbing and Albert Moll. The illustrations are unusual and profuse, but the paper and typography so poor as to minimize greatly their value.

CANCER AND ITS NON-SURGICAL TREATMENT. By L. Duncan Bulkley, A.M., M.D., Senior Physician to the New York Skin and Cancer Hospital. Cloth. Price, $6. Pp. 457. New York: William Wood and Company, 1921.

This is an unsound and unpropitious book. It claims that cancer is the result of "constitutional factors" and can be influenced favorably by diet. The teachings are against the early and radical surgical treatment of cancer, but not a shred of scientific proof is presented to show that cancer can be cured by diet. It is a pity that such medical heresy should be advanced by a member of the American Association for Cancer Research, especially since it will counteract the splendid work which that association is trying to do; and it is surprising that such a book should be issued under the authority of a well established medical publisher.

THE HORSE-STEALERS, AND OTHER STORIES. By Anton Chekhov. From the Russian by Constance Garnett. Cloth. Price, $2.25. Pp. 312. New York: Macmillan Company, 1921.

Among the great medical authors of our time, Chekhov is prominent as the greatest of the Russian short story writers. All of his work is marked by the medical point of view and the professional atmosphere. Already ten volumes of his writings have been translated into English. In the present book there are several stories almost wholly medical in character. Particular interest attaches to "Ward No. 6," a story of the life of a physician who has charge of the hospital in a poor rural district. In Ward No. 6, the psychopathic ward, there are several inmates who have been greatly neglected. Suddenly the physician begins to take an interest in this group. The gradual development of insanity in the physician is carefully traced to the moment when he, too, is confined in Ward No. 6. The story is one which only a physician could have written. It is a psychologic study of depth and power. Many of the twenty-two sketches in this volume are mere pen portraits and anecdotes. Practically all, however, are real and worth while.

A TEXT BOOK OF MATERIA MEDICA, BEING AN ACCOUNT OF THE MORE IMPORTANT CRUDE DRUGS OF VEGETABLE AND ANIMAL ORIGIN, DESIGNED FOR STUDENTS OF PHARMACY AND MEDICINE. By Henry G. Greenish, F.I.C., F.L.S., Professor of Pharmaceutics to the Pharmaceutical Society of Great Britain. Third edition. Cloth. Price, $7. Pp. 568, with 250 illustrations. London: J. & A. Churchill, 1920.

An advantage which this book has over many of its American competitors is conciseness. Many drugs commonly believed to be worthless or of small value are discussed briefly or are not mentioned. The student is thus saved much time by not being compelled to learn a great mass of useless or unpractical information. In studying each drug, the order followed is, in general: source, habitat, description of drug, microscopic character, identification factors to be noted by the student, constituents, assay method if practicable, description of adulterants likely to be present, and medicinal uses. Doses are not stated. The drugs are studied in sections, such as leaves, flowers, fruits, seeds, herbs and entire plants, wood, barks and subterranean organs. Also sections are devoted to the plant products and educts used in pharmacy, such as starches, dried juices, dried latex, gums, resins, oils, empyreumatic oils and animal extracts. The book will prove useful to medical and pharmaceutical students, teachers of materia medica, and to physicians who wish a brief reference work on materia medica.

Medicolegal

Privilege Not Waived as to Physician as Witness

(Walmer-Roberts v. Hennessey (Iowa), 181 N. W. R. 798)

The Supreme Court of Iowa says that, immediately after the plaintiff in this personal injury case was injured by being struck by the defendant's automobile, the defendant and a traffic officer conducted her to the office of a physician, who made an examination of her. His first was a "surface examination" in the presence of the defendant, the traffic officers, and the physician's office girl. The physician shortly afterward, on the same visit, made a roentgenoscopy of the plaintiff's arm. Questions propounded to the physician in regard to complaints made to him at said time by the plaintiff and as to the result of the examination so made were objected to as being privileged, and the objection was sustained. It was argued that the testimony was not privileged, because what was said and done between the physician and the plaintiff was in the presence of the traffic officer and of the defendant, and because the physician was employed by the defendant, and not by the plaintiff, as also because by offering the testimony of the traffic officer and herself in regard to the fact of going to the physician's office the privilege was waived. But the fact that the physician was one employed by the defendant, and that the plaintiff had not called or employed him as her own physician made no difference so far as the question of privilege was concerned in this case, for it appeared that the physician not only examined the plaintiff in his office, but called on her afterward in her home and advised her as to a course of treatment. Under the Iowa statute the prohibition does not apply to cases in which the party in whose favor it is made waives the rights conferred, and it was contended that the plaintiff did so in this case by offering her own testimony and that of the traffic officer; but neither of them testified regarding

the examination made by the physician, or to any communication, except that the plaintiff said that her ankle hurt. The physician called at her house twice after that, and told her to bathe her arm in hot water. The physician was offered as a witness for the defendant, and was asked to state what he found in connection with the plaintiff's claim as to personal injuries at that time, and whether from the complaint made by the plaintiff at that time and from his examination of her he found any evidence of any injury to either her ankle or her foot. Under the record, there was no error in the ruling that the testimony was privileged. The physician was within the prohibition of the statute as to any matters which he learned by observation and examination, as well as by a verbal communication. The basis of the alleged waiver was wholly testimony elicited from the plaintiff and the traffic officer on cross-examination. The plaintiff did not waive her right to object to the testimony of the physician as to the result of the examination made by him at the time referred to. Her admission on cross-examination, so far as it went, in regard to having told the physician about her suffering pain, would not open the door to permit the testimony of the physician as to the results of his examination, nor would the mere fact that under these circumstances she was taken to the physician's office, and in the presence of the officer and the defendant submitted to a "surface examination," waive her rights to object to the testimony of the physician.

Guide for Determining Necessity for Operation

(Kelly v. Hollingsworth (S. D.), 181 N. W. R. 959)

The Supreme Court of South Dakota, in reversing a judgment that was rendered in favor of the plaintiff, says that the action was brought on behalf of the parents of a child to recover damages for alleged malpractice resulting in her death. The child, a little girl 18 months old, had attempted to eat some peanuts, shells and all. She choked and was thereafter unable to speak above a whisper. This condition continuing, her parents took her to the defendant, who, after an examination and after being unable to locate and dislodge the foreign substance that was causing the condition from which the child was suffering, advised that she be taken to a hospital, and at the end of three days he performed an operation, opening up and exploring the trachea to try to locate and remove the foreign substance supposed to be lodged therein. The child died in about twenty-four hours. It was the plaintiff's theory that the operation was unnecessary and unjustified; that the defendant was negligent and careless in advising it, and that he so negligently and unskilfully performed the operation as to cause the death of the child.

As a part of his case, the plaintiff offered the testimony of a medical expert to whom a hypothetic question was propounded to which the defendant objected because, for the determination of whether the operation was justified, it was immaterial as to whether or not any such foreign substance was found; that the question should have been asked as to what was indicated rather than what was actually found. This exception was clearly well taken. A surgeon, in determining whether an operation is necessary, can be guided by only such information as he can gain without the operation. The question in this case was: If the defendant sought for and procured all the information which proper practice and investigation would disclose, was he justified in determining that an operation was necessary? If a surgeon, under information so gained, was justified in operating, he cannot be holden merely because, on the performance of the operation, it shall develop that he had erred in his conclusion as to the necessity thereof.

The defendant sought an instruction, a part of which was to the effect that, where a surgeon possesses the requisite qualifications and applies his skill and judgment with ordinary care and diligence to the diagnosis and treatment of a patient, he is not liable for an honest mistake or for an error of judgment in making a diagnosis or in prescribing a mode of treatment, when there is ground for reasonable doubt as to the practice to be pursued. That this instruction correctly stated the law cannot be disputed. An instruction proposed by the trial judge that it is the law that a physician or surgeon is not an insurer of the success of his professional treatments or operations; the law holds him only to the exercise of perfect good faith and to the possession and exercise of such reasonable care and professional knowledge and skill as exists at that time, was clearly a correct statement of law so far as it went, but the instruction was faulty in failing to advise the jury that the defendant could not be made responsible for error in judgment or mistakes in matters of doubt or uncertainty.

It was error to leave the jury at liberty to find that the operation itself was unskilfully performed, when there was absolutely no evidence from which it would have a right to so find. The evidence as to the operation merely disclosed that an incision was made in the trachea; that the defendant, by means of the insertion of his little finger and a small probe, attempted to ascertain whether there was, above the incision, any foreign substance in the trachea or windpipe; and that the defendant made an examination of such windpipe downward and to the first branches thereof. It needs no argument to demonstrate that whether what was thus done by the defendant was skilfully done could not be determined by a jury without the assistance of some surgical expert.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Child Hygiene Association, New Haven, Conn., Nov. 2-5.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Public Health Association, New York, Nov. 14-18.
American Society of Tropical Medicine, Hot Springs, Ark., Nov. 14-15.
Hawaii, Medical Society of, Honolulu, Nov. 21.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mid-Western Association of Anesthetists, Kansas City, Mo., Oct. 24-28.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
Southern Gastro-Enterological Association, Hot Springs, Ark., Nov. 14-17.
Southern Medical Association, Hot Springs, Ark., Nov. 14-17.
Tri-State District Medical Society, Milwaukee, Wis., Nov. 14-17.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS

Thirty-Fourth Annual Meeting, held at St. Louis, Sept. 20-22, 1921

The President, Dr. Henry Schwarz, St. Louis, in the Chair

Diabetes and Pregnancy

Dr. John N. Bell, Detroit: A more careful prenatal history should be taken of all obstetric patients. A blood sugar estimation should be made in all cases in which symptoms of diabetes are present, regardless of the presence or absence of glycosuria. A fair trial of the newer forms of treatment of diabetes should be instituted before terminating the pregnancy.

Heart Disease in Pregnancy

Dr. W. G. Dice, Toledo, Ohio: During pregnancy, no cardiac murmur or irregularity is of itself an evidence of heart disease. Pregnancy lessens the life expectancy of any woman with a chronic valvular or myocardial lesion. Valve lesions of themselves do not constitute a bar to pregnancy, but the manner in which the heart does its work is all important. Every cardiopath is a cripple, and her treatment throughout pregnancy and labor must be such as to spare the heart in every way. Cesarean section gives the best results in uncompensated cases and in cases in which heart failure threatens during labor.

Action of the Commoner Ecbolics in the First Stage of Labor

Dr. M. Pierce Rucker, Richmond, Va.: The patient with a Voorhees bag in her cervix offers an excellent opportunity to observe the action on the uterus of the drugs commonly used in obstetrics. Scopolamin (hyoscin) has a moderate

but rather constant ecbolic action in the first stage of labor. The action of quinin is more variable. Sometimes it markedly strengthens the normal rhythmic contractions, and sometimes it shows no action whatever. The possibility of an inert preparation of ergotol and the fluidextract of ergot is a real one. In three cases in which pituitary extract was used, even in minute doses, there was a continued contraction of the uterus that varied from nine to thirty-five minutes. This is probably the explanation of the many disasters that have followed its use.

Method of Delivery in Normal Cases

DR. MAGNUS A. TATE, Cincinnati: The steps of the method I use are: (1) The patient must be in labor with the os dilated to at least the size of half a dollar, and an effacement of the cervical canal; (2) surgical anesthesia is administered; (3) bladder is catheterized; (4) complete manual dilation of the vagina and cervix is performed; (5) the patient is allowed to regain partial consciousness; (6) pituitary extract, 0.5 c.c., is given, and repeated once if the pains are not efficient in half an hour; (7) the membranes are ruptured; (8) management of the delivery of the child is undertaken as in usual cases.

Analysis of the Potter Version

DR. EDWARD SPEIDEL, Louisville, Ky.: This method is such a decided improvement over all the old established methods that it should supplant all other means of performing podalic version. The delivery of the child after the version has been performed is such a marked advance over the old methods of breech delivery that it should displace those practices at once. The effective treatment of the child at birth by gentle rational manipulations is so superior to the many rough treatments that the asphyxiated baby has been subjected to heretofore, that it should induce every obstetrician to employ it.

Origin of Bleeding in Ectopic Pregnancy

DRS. JOHN OSBORN POLAK and THURSTON S. WELTON, Brooklyn: A decidual reaction may be found at several points in the tube in ectopic points often far remote from the seat of implantation. Coincident with the separation or death of the ovum by hemorrhage into the decidua, there is bleeding from the uterus and also bleeding from the several points of decidual reaction in the tube. Tubal peristalsis and the vis a tergo of the clot in the tube expel blood from the abdominal ostium into the peritoneum, which gravitates into the culdesac. The same factors contribute a portion of the blood, making up the bloody discharge from the uterus, which signifies the separation or death of the embryo.

Treatment of Cancer of the Cervix

DR. ROLAND E. SKEEL, Los Angeles: Panhysterectomy should be reserved for cases in which a positive diagnosis can be made only with the microscope. The parametrium being free, so far as digital examination can determine, but the case far enough advanced to be diagnosable clinically, a high cautery amputation of the cervix followed by radium treatment offers the greatest hope of cure. The advanced, surgically hopeless case should be treated by radium rather than with the knife, curet and cautery, chemical caustics or Percy cauterization, unless profound toxemia or serious infection contraindicates local interference of any kind.

Valuable Methods Used to Extend Operability in Advanced Cancer of the Cervix

DR. GEORGE VAN AMBER BROWN, Detroit: The use of the starvation ligature mechanically accomplishes instantly in the blood supply what a study of a microscopic specimen of carcinoma shows nature is endeavoring to accomplish. The vessels should be tied at two points with either kangaroo tendon or heavy cutgut ligature, as finer cutgut may cut the vessel wall and precipitate a hemorrhage. Between the ties the arteries are crushed to a ribbon. Absorbable suture is used to avoid as far as possible the irritation factor that will undoubtedly arise from the use of the nonabsorbable material. In applying the heat the temperature is kept at from 122 to 140 F. and the abdomen should always be opened so that the heating iron can be guided properly from the vagina through the cervix to the fundus. Should one not care to depend on the heat and starvation ligature, and extirpation of the uterus is to follow, it should be done as a thermocauterectomy between the second and fourth week before the sickened cells have recuperated and before the deposit of scar tissue is sufficient to interfere seriously with operative procedures. After surgical procedures have been completed, the roentgen ray or radium, or both, may be employed to advantage. Postoperatively, to pursue a set course without variations is hazardous. Along with the details mentioned, attention should be given to diet, fresh air and other measures that will raise the general resistance of the individual. In advanced carcinoma of the cervix, heat and starvation ligature are methods that should precede a contemplated panhysterectomy. While roentgen rays and radium are useful postoperative adjuvants, they should never be used as preoperative measures.

Control of Mortality of Abdominal Operations for Cancer

DR. GEORGE W. CRILE, Cleveland: Every case is individualized. The type of operation and of postoperative care follows the anatomic and pathologic indication. Nitrous oxid-oxygen analgesia is used in grave risks, anesthesia being secured mainly by local anesthesia. Fear and anxiety are controlled by management, and, when necessary, morphin. An ample incision, feather-edge technic, minimum exposure of raw tissue to the air, prevention of loss of blood, conservation of body heat, all help to secure the utmost protection of the patient. Blood transfusion is performed before, during or after operation, and is repeated according to the state of the patient. A dietetic and hygienic regimen—forced feeding and fresh air in abundance—is established. By the use of these general measures and a technic adapted to the extent of involvement in the individual case, the mortality of resections of abdominal viscera for cancer has been progressively decreased and the range of operability extended, and the postoperative morbidity minimized.

Teratomas of Ovary

DR. MILES F. PORTER, Fort Wayne, Ind.: A primipara gave birth to a dead baby, normally a few days past term. The tumor was first discovered after delivery, and removed five days after labor. Her recovery was complicated by paratyphoid infection. The tumor contained 9 quarts of fluid.

New Trend in Gynecologic Therapy

DR. GEORGE GELLHORN, St. Louis: Just at the time when the general surgeons are claiming gynecology for their own, there is a marked tendency in gynecology to resort to nonoperative methods. The results accomplished with radium and roentgen rays in the treatment of cancer and certain forms of fibroids in the uterus surpass the achievements of the strictly surgical era. While results are not yet conclusive, they hold out promise for the future. Certain diseases of the external genitals which heretofore have been entirely within the domain of gynecologic surgery are cured more readily by nonsurgical means.

Gynecologic Operations Under Local Anesthesia

DR. ROBERT EMMET FARR, Minneapolis: The most ideal condition for the performance of surgical operations has been brought about by the preliminary use of morphin, combined with magnesium sulphate, and the establishment of perfect local anesthesia. It offers special advantages over other forms of anesthesia now in use.

Suppurating Uterine Myomas

DR. WILLIAM EDGAR DARNALL, Atlantic City, N. J.: Necrosis of myoma is fairly common: much more so than suppuration. Suppuration of myoma as shown by statistics is rare, and yet I cannot but feel that if every tumor removed in every hospital were cut open and examined, we would find it much more common than we think.

Atresia and Stricture of Vagina

DR. JAMES E. KING, Buffalo: In the cases of atresia resulting from infantile vaginal infections, it is often impossible to obtain a history of the vaginal discharge, and it may thus be difficult to establish the real cause of an atresia discovered in adult life. Undoubtedly by far the most com-

mon cause of an atresia developing during childhood is infantile vaginitis. The atresia due to stricture seems to present greater difficulties than the atresia due to vaginal adhesions. As a rule, the scar of these strictures is deep and its base broad. Before proceeding with the operation itself, the strictures should be most thoroughly stretched with dilators and fingers, until sufficient dilatation is obtained to permit one to determine the limits of the scar.

Ureteral Obstruction

DR. K. I. SANES, Pittsburgh: The failure to recognize ureteral obstruction is a frequent cause of unnecessary operations. Good histories and careful physical examinations can be relied on to give the indications for investigation of the urinary tract. Such investigations require a great deal of effort. It demands a carefully taken history, a complete urinalysis, an examination of the abdominal and pelvic organs, a cystoscopic examination, a catheterization of one or both kidneys, a roentgen-ray study of the urinary tract, and, not infrequently, of the gallbladder, colon, stomach and duodenum. Such a study is time consuming and requires close cooperation.

Plea for Routine Examination on the Operating Table as a Preliminary to Abdominal Operations

DR. JOHN W. KEEFE, Providence, R. I.: I would emphasize (1) the value of routine examinations under anesthesia on the operating table preliminary to abdominal operations; (2) the necessity of a period to be spent in the general practice of medicine previous to becoming a specialist; (3) that we consider the human body as a living unitary organism, and (4) the desirability of the masters in medicine becoming peripatetic and lecturing as exchange professors in the various universities.

Transperitoneal Nephropexy

DR. THOMAS B. NOBLE, Indianapolis: This operation establishes regional and general abdominal diagnosis; through its primary incision much other work can be done on other abdominal viscera, if necessary; it permits the operator to put the kidney where it should be put, and the lapse of time since its inauguration has been sufficient to prove the virtue of its characters.

Spinal Anesthesia in Obstetrics, Gynecology and Abdominal Surgery

DR. R. R. HUGGINS, Pittsburgh: The freedom from nausea, abdominal distention, postoperative weakness and other disturbances so common with other forms of anesthesia recommend it as an improved method for cases when given under proper supervision and with full knowledge of its danger. Spinal anesthesia is the best anesthetic known today for certain operations in the lower abdomen. It should be resorted to only after careful study of the patient. If it is not properly employed by one possessing sufficient skill, it may have a large mortality.

Transuterine Insufflation, a Diagnostic Aid in Sterility

DR. A. J. RONGY, New York: This procedure has been used in a sufficiently large number of cases by three or more investigators to warrant its universal adoption as a routine method in the diagnosis of and treatment of sterility. This procedure has been found to be safe, and we utilize it in every case in which we think it is indicated.

The Doctor's Fee.—"So of doctors. They like fees no doubt,—ought to like them; yet if they are brave and well educated, the entire object of their lives is not fees. They, on the whole, desire to cure the sick; and,—if they are good doctors, and the choice were fairly put to them,—would rather cure their patient, and lose their fee, than kill him, and get it. And so with all other brave and rightly trained men; their work is first, their fee second—very important always, but still *second*. But in every nation, as I said, there are a vast class who are ill-educated, cowardly, and more or less stupid. And with these people, just as certainly the fee is first, and the work second, as with brave people the work is first and the fee second. And this is no small distinction."—John Ruskin: The Crown of Wild Olive (Essay on Work), 1866.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

Sept. 15, 1921, **28**, No. 3

*Epitheliomas of Thymic Origin. D. Symmers and B. M. Vance, New York.—p. 239.
*Betelnut Chewing and Its Effects, Including Cancer of Mouth. A. G. Ellis, Bangkok, Siam.—p. 252.
*Carotinemia, Report of Case in Adult. G. D. Head and R. A. Johnson, Minneapolis.—p. 268.
*Focal Infection and Elective Localization in Etiology of Myositis. E. C. Rosenow and W. Ashby, Rochester, Minn.—p. 274.
*Causes of Variations in Sedimentation of Corpuscles and Formation of Crusta Phlogistica ("Size," "Buffy Coat") on Blood. H. C. Gram, Copenhagen, Denmark.—p. 312.
*Relation of Urea to Uremia. L. Leiter, Chicago.—p. 331.
*Metabolic Studies on Case of Diabetes Insipidus. I. M. Rabinowitch, Montreal.—p. 355.

Epitheliomas of Thymic Origin.—Symmers and Vance found only three examples of primary thymic epithelioma in the literature. A fourth case is recorded by them. The patient, a man, 56 years of age, complained of retrosternal pains, dyspnea and loss of weight and strength. The total duration of illness was two years. At necropsy, a tumor was found occupying the thymic area. The growth was roughly triangular in shape with the base upward and was described as about the size of an adult head. It was whitish in color and of cartilaginoid consistence, infiltrated the upper borders of the lungs and sternum, and was adherent to the trachea, the pericardium and auricles of the heart, and to the large vessels and nerves of the vicinity. No metastases were found. Microscopic examination showed that the tumor cells were from 5 to 30 micromillimeters in size, polyhedral in outline, many of them hyperchromatic. They were arranged in solid cords, showing in places attempts to form concentric bodies with central areas of keratinization. The tumor belongs in the group of epitheliomas.

Cancer of Mouth from Chewing Betelnut.—Betelnut chewing is a well-nigh universal habit of the Siamese people. Decay of the teeth is prevented almost completely, apparently by the deposit of concretions. Neither antiseptic nor bacterial action on the flora of the mouth is exerted by the substances chewed. Contrary to general belief, Ellis says, direct constitutional effects of the habit appear to be negligible. Betelnut chewing leads to chronic changes in the mucous membrane of the mouth, recession of the gums, pyorrhea alveolaris, deposit of lime concretions on the teeth, atrophy of alveolar processes and loosening and loss of teeth. As the loss of teeth appears to be the most serious result of betelnut chewing, a thorough study of its mechanism and prevention is eminently desirable. Betelnut chewing does not frequently cause cancer of the mouth, but there are reasons for believing that, in an as yet undetermined percentage of cases, it does lead to this result.

Carotinemia in Adult.—Head and Johnson report a case of marked orange yellow skin pigmentation, most intense in the palms of the hands, without involvement of the sclerae, in an adult with moderately severe diabetes. Carrots had formed a heavy component of the previous diet. The blood serum showed a bright golden yellow color which was chemically demonstrated to be due to carotin. The urine showed no bile pigments, and withdrawal of the carrots from the diet caused a disappearance of the pigmentation.

Etiology of Myositis.—Localized infections around teeth and in tonsils were demonstrably present in nearly all of the twenty-eight patients studied by Rosenow and Ashby. Improvement in symptoms, often striking, occurred in all but one of the twenty-five patients from whom foci were removed. In the twenty-four patients in whom improvement did occur the focus was shown to contain bacteria which tended to produce lesions in the muscles of animals, while in the one patient in whom improvement did not occur the bacteria failed to produce lesions. In some patients recurrence of myositis or only partial recovery was found to be due to defective tonsillectomies, to inadequate dental operations, to failure in recognizing the existence of foci in teeth, or to the

development of new localized areas of infection. Therefore, localized infections in tonsils, teeth and elsewhere, in the patients studied appeared to play an important part not only in the etiology of pure myositis, but also in associated conditions, such as myositis and arthritis, myositis and neuritis, nontraumatic lumbago and myocardial degeneration. In the light of these facts, foci of infection apparently not only make a forced relationship between the bacteria and their products and the mechanism of resistance of the host, but, it would seem, afford the conditions favorable for the microorganism to acquire peculiar infecting powers. The elective affinity of the streptococci from these localized infections was so marked, that the organisms not only tended to localize and produce lesions in muscles, but the location of the lesions often approximated that noted in the patient. When the affection of other structures, such as joints and nerves, appeared as a secondary factor in the patient's symptomatology, lesions were also found in these structures in the injected animals, and the percentage of animals showing them was proportionately less than the percentage of animals showing muscle lesions. In pregnant rabbits localization occurred not only in the muscles of the parent rabbit, but also in the fetuses. The streptococcus from myositis did not differ greatly in morphology, cultural character, and staining reactions from those isolated in other diseases studied, and the reasons for the myositis strains possessing affinity for muscles, and the other strains for the respective other tissues or organs are still obscure. The fact, however, that the killed streptococci from myositis localized in muscles, as did the live organism, indicates that the property (chemical structure, electrical charge, perhaps) on which this depends resides within the bacterial cell. From the microscopic study of sections of muscles in chronic myositis and arthritis deformans, and of those in animals following repeated injections of these strains, evidence has been obtained as to why cure in these chronic affections is so difficult, and the reason massage and applications of heat are such valuable agents in their treatment. The reactions in these very chronic conditions is not leukocytic, but mainly mononuclear and endothelial. The endothelial cells lining the small blood vessels become extremely swollen, proliferate, and, in consequence, the lumen of vessels, including arterioles, becomes partially or completely obstructed. The supply of available oxygen is thus lowered and the growth of the organisms favored, for it has been found that the streptococci from the lesions in muscles are very sensitive to oxygen. The common occurrence of spontaneous and experimental lesions in flat muscles or in the tendinous ends where the normal blood supply, and, consequently, the supply of available oxygen in response to insult are relatively low would seem to be due to the same cause.

Crusta Phlogistica on Blood.—From clinical and experimental observations, Gram concludes that the formation of crusta phlogistica is a pathologic phenomenon which depends on an accelerated sedimentation or a lengthened clotting time. The sedimentation of the corpuscles depends on: (1) the fibrin (fibrinogen) percentage in the plasma, the sedimentation being accelerated by a rise in this value, and, vice versa. The fibrinogen brings this about by causing an agglutination of the corpuscles, which facilitates their sedimentation; (2) the cell volume percentage, the sedimentation being accelerated by a drop in this value, and vice versa; (3) the temperature, the sedimentation being accelerated when the temperature is higher, and vice versa. The first two factors may counteract or assist one another, so that a knowledge of one of these, together with a determination of the velocity of sedimentation, allows an estimate of the other factor, that is, if the temperature of the surroundings is constant. The coagulation time of the blood is found lengthened in hemophilia, and diseases which cause a thrombopenia, i. e., pernicious anemia, lymphatic leukemia, influenzal pneumonia, etc.

Relation of Urea to Uremia.—According to Leiter, the injection of urea, intravenously, in dogs produces a train of symptoms entirely analogous to that found in the convulsive or true uremia in man. Lesions are produced in the alimentary mucosa that may be related to uremic colitis. There seems to be a rather difinite correlation between the severity of the symptoms and the concentration of urea in the blood. Evidence was obtained that there is an active excretion of urea by the stomach, bile and intestine when excessive amounts are present in the blood.

Metabolism in Diabetes Insipidus.—In a case of diabetes insipidus studied by Rabinowitch there was no one specific cause for the polyuria. An endocrine and a renal factor were found. Since the administration of pituitary extract improved not only the concentration but also the rate of excretion, it is suggested that the theory advanced that diabetes insipidus is produced by a lack of some internal secretion which normally regulates and moderates diuresis by acting on the renal cells holds in this case.

Archives of Ophthalmology, New Rochelle

September, 1921, **50**, No. 5

Ophthalmologic Findings in Traumatic Asphyxia; Report of Case. P. D. Berrisford, St. Paul.—p. 411.
Ophthalmologic Conditions. H. Smith, London, Eng.—p. 422.
Report of Second Hundred Successive Extractions of Cataract in Capsule After Preliminary Subluxation with Capsule Forceps. A. Knapp, New York.—p. 426.
Melanosarcoma of Choroid Occurring in Brothers. A. O. Pfingst, and S. Graves, Louisville, Ky.—p. 431.
Practical Points in Cataract Extraction Emphasized in Col. Henry Smith's Technic for Intracapsular Extraction. C. King, Cincinnati. —p. 440.
Treatment After Cataract Operations. J. W. Millette, Dayton, Ohio. —p. 446.
Glioma Retinae Treated by Roentgen Rays with Apparent Destruction of Tumor and Preservation of Normal Vision. F. H. Verhoeff, Boston.—p. 450.
Spontaneous Hypotonus in Juvenile Glaucoma. A. H. Riedel, New York.—p. 457.

Arkansas Medical Society Journal, Little Rock

September, 1921, **17**, No. 4

Glioma of Retina: Report of Case. H. Moulton, Fort Smith.—p. 79.
Industrial Medical Department of Future. A. E. Chace, Texarkana.—p. 81.

Boston Medical and Surgical Journal

Sept. 22, 1921, **185**, No. 12

*Nomographic Charts for Calculation of Metabolic Rate by Gasometer Method. W. M. Boothby and R. B. Sandiford, Rochester, Minn.—p. 337.
*Hospital as Diagnostic Center. E. L. Hunt, Worcester.—p. 354.
Resident Surgeon and Hospital. D. S. Adams, Worcester.—p. 356.

Gasometer Method for Metabolism Calculation.—Boothby and Sandiford present abridged tables and a series of nomographic charts by which the metabolic rate can be calculated by a graphic method in less than five minutes. An abridged logarithmic factor table for reducing gas volumes to standard temperature and pressure dry is also included so that, if preferred, the calculation may be carried out first by logarithms and the result checked by the graphic charts. The authors prefer the combined method, since checking the results by a method entirely different from the original computation precludes the possibility of an error in calculation. For this purpose they have arranged a "calculation form" adapted for rapid checking of each step of the mathematical calculation by the charts. The condensed tables and calculation form are given, as well as the reasons for the preference of the gasometer method to indirect calorimetry.

Hospital as Diagnostic Center.—Hunt urges that all public hospitals in Massachusetts adopt a system whereby their diagnostic facilities shall become available for all classes of citizens to the end that greater service shall be rendered and the trend toward greater socialization in medicine shall be guided by the trained intellects in the profession rather than thrust on it by those unfamiliar with and without sympathy for the best developments of medical practice.

Canadian Medical Association Journal, Toronto

June, 1921, **11**, No. 6

Importance of Precise Anatomical Knowledge in Surgery of Peripheral Nerves. A. Gibson.—p. 401.
Surgical Treatment of Chronic Infected Open Pneumothorax. F. H. Gurd.—p. 408.
Injuries of Spine. G. E. Wilson.—p. 415.
Dental Infection and Internal Medicine. S. J. S. Peirce.—p. 423.
Nature of Acidosis in Nephritis. E. H. Mason.—p. 424.
Fragilitas Ossium. H. P. Wright.—p. 427.

Novocain in Surgical Operations. H. S. Sharpe.—p. 430.
Chronic Infections of Nasal Accessory Sinuses with Toxic Absorption. L. DeV. Chipman.—p. 434.
Causation of Psychoneuroses. G. Howland.—p. 437.
Appendicitis; High Mortality in Perforated Cases. E. M. Eberts and L. H. McKim.—p. 443.
Future Function of Modern Medicine. H. W. Hill.—p. 444.
*Two Rare Abnormalities Occurring in Same Subject: Partial Absence of Corpus Callosum and Stomach Situated Entirely Within Thorax. J. Cameron and A. G. Nichols.—p. 448.
Some Results of Protective Inoculation Against Epidemic Influenza. G. B. Reed.—p. 545.
Treatment of Anemia by Drugs. R. D. Rudolf.—p. 457.
Spontaneous Rupture of Bladder in Parturition. C. B. Keenan.—p. 459.
Postmortem Delivery. F. J. O'Connor.—p. 460.

Partial Absence of Corpus Callosum.—These anomalies were discovered in a girl, 15 years of age, who had been an idiot from birth; never developed mentally from childhood, but was fairly well developed physically. Conversation showed a childish type of mind. She answered questions in monosyllables, followed by a childish grin. Her habits were dirty. She was always a heavy eater. She never showed any dyspnea. Menstruation occurred every two or three months, and was very profuse, simulating a hemorrhage and lasting a week. She was in good health until three weeks before her death. She complained first of headache, then of pain in the abdomen, which became greatly distended with gas. At first, there was diarrhea, later constipation developed. The temperature was variable, reaching at times 103 F. She appeared to be improving, but died suddenly while being bathed. Unlike children of her age she did not enter into conversation with other persons, but her remarks were chiefly restricted to answering "yes" or "no" to questions asked her. She had a doll which she sang to—chiefly ragtime songs, which she had picked up, and familiar hymns, but the hymns were all mixed up, and she never sang a hymn through. She would talk a little when a conversation was begun by some one else. She had little reasoning power, and was quite excitable, laughing and calling at the boys playing on the lawn. She was impulsive, rather than lethargic; not quarrelsome, timid, and afraid of the water and of strangers. The body was sent to the medical school for dissection. Exploration disclosed the fact that the duodenum, when traced upward, disappeared into the thorax through what ought to have been the esophageal opening of the diaphragm. On opening the thorax the stomach was seen forcibly doubled on itself, lying within a peritoneal sac situated between the heart and the inner surface of the right lung and between the pericardial sac and the mediastinal pleura. This sac displaced the heart slightly to the left, and also gave rise to a deep permanent indentation on the inner aspect of the right lung below and behind its root. On opening the dura mater it was noted that the falx cereberi existed at its anterior and posterior ends. It was of crista galli, while its posterior end was merely 1½ inches wide. On removal of the brain, it was observed that the arachnoid bridged across the longitudinal fissure throughout almost its whole extent giving the impression that the mesial surfaces of the hemispheres were fused together. The anterior end of the corpus callosum immediately behind the genu was of normal thickness. About half an inch behind this point however, it faded away as a definite structure and was replaced by a lamina of gray matter at the bottom of the longitudinal fissure supported underneath by a thin layer of white matter and ependyma. Other evidences of the hydrocephalic condition usually associated with deficiency of the corpus callosum were found. A complete necropsy report of the case is given.

Colorado Medicine, Denver

September, 1921, **18**, No. 9

Future for Research in Climatology. C. E. Edson, Denver.—p. 190.
Hernia. B. B. Blotz, Rocky Ford.—p. 194.
Vitamins and Their Relation to Deficiency Diseases. E. B. Qucal, Boulder.—p. 195.

Georgia Medical Association Journal, Atlanta

September, 1921, **10**, No. 16

Plea for More Thorough Examinations Before Operations are Performed. E. C. Davis, Atlanta.—p. 653.
Review of 1,000 Cases from Department of Diagnosis of Harbin Hospital. W. H. Lewis, Rome.—p. 657.
Physicians of Georgia. W. A. Davis, Atlanta.—p. 662.
Radical Versus Conservative Operation on Uterine Appendages. M. T. Benson, Atlanta.—p. 667.
Interesting Obstetric Experience. J. G. Earnest, Atlanta.—p. 670.
Pelvic Infection in Female. L. J. Johns, Tallapoosa.—p. 672.
Recent Improvements in Dietetic Treatment of Diabetes Mellitus. J. E. Paullin and H. M. Bowcock, Atlanta.—p. 676.
Use of Vaccines in Chronic Bronchitis. G. F. Klugh, Atlanta.—p. 678.
Rôle of Tooth and Tonsil in Systemic Infections. E. S. Osborne, Savannah.—p. 680.

Indiana State Medical Association Journal, Fort Wayne

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Pernicious Anemia and Its Treatment by Homohemotherapy. B. M. Edlavitch, Fort Wayne.—p. 177.
Infections of Hand. F. G. Jackson, Muncie.—p. 180.
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Physician. F. B. Wynn, Indianapolis.—p. 186.

Kentucky Medical Journal, Bowling Green

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Multiple Osterochondromas in Mother and Son. J. D. Trawick, Louisville.—p. 424.
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Laryngoscope, St. Louis

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Case of Air Embolus by Way of Lateral Sinus; Reaction and Untoward Recovery. S. S. Quittner, Cleveland.—p. 603.
Double Sigmoid Portion of Lateral Sinus. J. M. Brown, Los Angeles.—p. 605.
Lung Abscess Following Tonsillectomy. Report of Case with Bronchoscopic and Roentgen-Ray Findings. I. W. Voorhees, New York.—p. 609.
Laryngologic Aspect of Incipient Hyperthyroidism. L. Hubert, New York.—p. 616.
Reduction of Old Fractures of Nose. J. D. Whitham, New York.—p. 620.
Need for More Thorough Training in Otology for Undergraduates in Medicine. H. Newhart, Minneapolis.—p. 622.
Use of Scarlet Red Emulsion in Atrophic Rhinitis (Ozena); (A Preliminary Report). J. C. Seal, New York.—p. 628.
Unusual Case of Bilateral Abductor Laryngeal Paresis. G. B. New, Rochester, Minn.—p. 630.
New Intranasal Suture Set. S. Israel, Houston, Texas.—p. 633.
Deformity of Nasal Bones Following Chronic Nasal Suppuration in Rabbit. W. V. Mullin and C. T. Ryder, Colorado Springs, Colo.—p. 634.
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Medical Record, New York

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What State Demands of Its Sentinels of Mental Health. D. A. Laird, Iowa City.—p. 500.
Sixty-Five Cases of Cervical Ribs. I. S. Trostler, Chicago.—p. 504.
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*Use of Thick Cereal Mixtures in Difficult Feeding Cases. H. D. Chapin, New York.—p. 539.

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Postpartum Hemorrhage (Cervical). H. D. Fair, Muncie, Ind.—p. 544.
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Tonsil Hemorrhage; with New Procedure for Control Thereof. A. Kahn, New York.—p. 547.
Therapeutic Application of Galvanopalpation and Faradopalpation. M. Kahane, Vienna.—p. 548.

Digestible Mixtures for Malnourished Infants.—Three mixtures have been employed by Chapin in the feeding of infants who were suffering from obstinate indigestion which resulted in distinct malnutrition: (1) Skim milk, 11 ounces; water, 7 ounces; farina, 3 level tablespoonfuls; boil these three one-half hour; remove top 4 ounces from 1 quart of milk; add granulated sugar, 1 level tablespoonful. Feed 3 ounces every four hours, and water every four hours, alternating. (2) Skim milk, 15 ounces; water, 6 ounces; farina, 3 level tablespoonfuls; boil these three one-half hour; remove top 4 ounces from 1 quart of milk; add granulated sugar, 1 level tablespoonful. Feed 3½ ounces every four hours, and water every four hours, alternating. (3) Skim milk, 28 ounces; water, 9 ounces; farina, 4½ level tablespoonfuls; boil these three one-half hour; remove top 4 ounces from 1 quart of milk; add granulated sugar, 1 level tablespoonful, and malt sugar, 1 level tablespoonful. Feed from 4 to 6 ounces every four hours, and water every four hours, alternating. The effects of this feeding were occasionally uncertain, usually good, and sometimes remarkable. The babies seemed to like the taste afforded by the cane sugar, and the gelatinized starch appeared to prevent a laxative or fermentative effect from the sugar. Since starch is a complex carbohydrate, it is slowly converted and thus affords less opportunity for fermentation. The gelatinized starch also carries a high protein content for the age into the digestive tract in colloidal form. The mechanical splitting up of the coagulated protein and the ballast to the bowel afforded by mere bulk also seems to have a stabilizing influence. As starches and sugars are carriers of energized carbon and water, the gain in tissue may thus be explained. A study of the cases reported confirms the view that thick cereal mixtures form a valuable resource in certain cases of persistent vomiting and will check wasting in some infants that fail to hold their weight on ordinary food formulas.

Michigan State Medical Society Journal, Grand Rapids

July, 1921, **20**, No. 7

Attainment of Certain Ideals in Obstetrics. A. M. Campbell, Grand Rapids.—p. 263.
Digitalis Therapy. J. B. Whinery, Grand Rapids.—p. 266.
Peripheral Nerve Injuries. W. T. Dodge, Big Rapids.—p. 268.

New York Medical Journal

Sept. 21, 1921, **114**, No. 6

*Pseudotabetics and Their Reeducational Treatment. P. Kouindjy, Paris.—p. 317.
*Protein Sensitization with Special Reference to Bronchial Asthma, Hay Fever and Eczema. M. A. Ramirez, New York.—p. 320.
Protein Desensitization from Point of View of General Practitioner. J. F. Ward, Brooklyn.—p. 325.
Pollen Protein Intoxication in Nonseasonal Bronchial Asthma. A. Sterling, Philadelphia.—p. 328.
*Endobronchial Treatment of Bronchial Asthma and Asthmatic Bronchitis. M. J. Gottlieb, New York.—p. 333.
Pollinosis, or Hay Fever. B. C. Gile, Philadelphia.—p. 337.
Few Meteorotelluric Observations. G. N. Jack, Buffalo.—p. 338.
Causes of Internal Hemorrhoids. C. J. Drueck, Chicago.—p. 340.
Acute Appendicitis in Inguinal Hernia. A. Wildman, Brooklyn.—p. 341.
Combined Right Inguinal Hernia Appendix Operation. H. Cohen, New York.—p. 343.
Strangulated Inguinal Hernia Reduced En Bloc. M. W. Dyer, Syracuse, N. Y.—p. 344.
Unusual Foreign Body (Full Sized Drinking Glass) in Rectum. J. F. W. Meagher, Brooklyn.—p. 346.
Traumatic Injuries of Abdomen. F. W. McGuire, Buffalo.—p. 348.
*Abdominal Contraction Method of Diagnosis. L. W. Kohn, New York.—p. 350.
Infectious Diseases Interesting Medical Profession at Present Time. J. R. Graham, New York.—p. 351.
*Crime and Drug Habit. J. A. Hamilton, New York.—p. 355.

Treatment of Pseudotabetics.—It is often simple enough says Kouindjy to mistake a pseudotabetic for a genuine case of tabes, for the symptomatology in both instances is frequently very similar. Occasionally, this similarity extends even to a confusion in the findings of morbid anatomy. In spite of this, pseudotabes is a pathologic entity easily distinguished from true tabes on account of its etiology and, especially, of its course. Pseudotabetics are characterized by their tendency to complete cure, by tenderness on pressure of muscles, and by the absence of the Argyll Robertson pupil. Further, they can be distinguished by the different topographic distribution of anesthesias, which here diminish from the distal end toward the root of a limb, whereas in tabes they always show a radicular distribution. The treatment of election of pseudotabes must comprise treatment of the etiologic cause and also symptomatic treatment. Physiotherapeutic treatment occupies a predominant place in the second instance. Reeducation must be considered the most rational measure, being calculated to combat at the same time both the motor disturbances of progression and the psychic state of pseudotabetics.

Protein Sensitization in Treatment of Bronchial Asthma.—The prognosis of asthma with proper treatment Ramirez asserts is excellent in the sensitive cases, provided the patient has not chronic bronchitis or marked emphysema. The severity of bronchitis, the degree of emphysema, and the resistance of the individual to bacteria modify the prognosis in the nonsensitive type. Cases are cited.

Endobronchial Treatment of Bronchial Asthma.—Endobronchial treatment in Gottlieb's opinion is the most valuable procedure for treating cases of asthmatic bronchitis and bronchial asthma, where the elimination of the allergic substances and vaccine therapy, combined with the other measures suggested, have failed to produce the results desired. Astringents, such as silver nitrate and tannic acid, have not only the property of temporarily dilating the lumen of the bronchial tree but also, when applied often enough and a short intervals, say weekly, have the effect of rendering the mucous membrane less susceptible to infection.

Value of Abdominal Contraction Method in Diagnosis.—Maintained voluntary abdominal contraction has been used by Kohn as a routine aid in diagnosis in a great number of cases. The method is based on the principle of increased intra-abdominal tension and the pressure is exerted in a downward direction. It consists simply in having the patient institute the bearing down act of defecation after having first taken a deep inspiration. The patient is instructed, while in a recumbent position, to take a deep breath and then bear down on the abdomen while holding the breath. As a result, the diaphragm is prevented from moving upward by the closure of the glottis and the abdominal muscles are contracted down while the muscles of the perineum are relaxed, in consequence of which the visceral organs of the abdomen and pelvis are forced downward. Inspection, percussion, auscultation, deep pressure, and other palpatory methods may be practiced while the abdomen is thus contracted.

Crime and Drug Habit.—Hamilton analyzes 914 cases of drug addiction which were received at the Workhouse, Blackwell's Island, during 1920 for treatment. The treatment employed by the resident physician, Dr. Stuart MacVean, is described.

Oklahoma State Medical Assn. Journal, Muskogee

April, 1921, **14**, No. 4

Interpretation of Bladder Symptoms in Female. J. C. Mraz, Oklahoma City.—p. 77.
Hematuria of Genito-Urinary Tract. W. J. Wallace, Oklahoma City.—p. 81.
Diagnosis and Treatment of Stricture of Urethra. C. B. Taylor, Oklahoma City.—p. 85.
Diagnostic Value of Blood Chemistry. W. H. Bailey, Oklahoma City.—p. 89.
Tumors of Breasts Disappearing Under Roentgen-Ray Treatment. A. R. Wiley, Tulsa.—p. 96.

May, 1921, **14**, No. 5

Antepartum Obstetric Examination. R. E. Looney, Oklahoma City.—p. 103.
Prophylaxis in Obstetrics. J. W. Brown, Tulsa.—p. 106.
Colon Bacillus as Factor in Diseases of Infancy and Childhood. T. C. Sanders, Shawnee.—p. 109.
Chancroidal Infections: Diagnosis and Treatment. E. L. Cohenour, Tulsa.—p. 111.
Brain Tumor in Boy Four Years of Age. W. M. Taylor, Oklahoma City.—p. 115.
Stone in Kidney: Removal by Pyelotomy. A. D. Bevan, Chicago.—p. 116.

Pennsylvania Medical Journal, Harrisburg.

May, 1921, **24**, No. 8

Practice of Medicine Worth While? E. O'N. Kane, Kane.—p. 531.
End Results in 608 Cases of Peripheral Nerve Injury. W. W. Babcock and J. O. Bower, Philadelphia.—p. 533.
Pericarditis. G. E. Holzapple, York.—p. 540.
Treatment of Hyperthyroidism. F. B. Utley, Pittsburgh.—p. 544.
Ovarian Pregnancy; Report of Case. S. A. Chalfant, Pittsburgh.—p. 548.
Phase of Accessory Sinus Disease. B. M. Dickinson, Pittsburgh.—p. 551.
Feeding During First Two Years. E. E. Graham, Philadelphia.—p. 555.
Origin of Pennsylvania Medical Journal. C. L. Stevens, Athens.—p. 560.
Prevention of Syphilis and Its Sanitary Management. W. M. Baker, Warren.—p. 564.

Tennessee State Medical Association Journal, Nashville

July, 1921, **14**, No. 2

Trachoma and Folliculosis. E. C. Ellett, Memphis.—p. 83.
Radium in Nonmalignant Uterine Bleeding. W. S. Anderson, Memphis.—p. 88.
Radium In Gynecology. S. Abernathy, Memphis.—p. 91.
Blood Transfusion: Therapeutic Uses. H. Q. Fletcher, Chattanooga.—p. 98.
Raynaud's Disease. J. Witherspoon, Nashville.—p. 102.
Septic Infection of Urinary Passages in Children. R. H. Perry and S. P. Bailey, Nashville.—p. 104.

Virginia Medical Monthly, Richmond

September, 1921, **48**, No. 6

Aterial Hypertension and Hypotension. J. W. Preston, Roanoke.—p. 293.
Management of Broken Compensation. F. H. Smith, Abingdon.—p. 296.
Surgical Side of Cardiovascular-Renal Diseases. A. P. Jones, Roanoke.—p. 301.
Neurosyphilis. G. A. Wright, Marion.—p. 302.
Treatment of Syphilis. P. S. Smith, Abingdon.—p. 305.
Differential Diagnosis of Pulmonary Disease. E. E. Watson, Salem.—p. 309.
Plea for Physical Examination of School Children. C. E. Dyer, Pulaski.—p. 310.
Roentgenologic and Cystoscopic Examination of Certain Abdominal Diseases at first Diagnosed Appendicitis. B. E. Rhudy, Abingdon.—p. 312.
Three thousand Cases of Vaccination in Past Year. C. Moore, Roanoke.—p. 317.
Eye Conditions in Connection with General Diseases. E. L. Sutherland, Roanoke.—p. 318.
Nursing Situation in Virginia, and Necessity for Revision of Training Course, from Viewpoint of Physician. J. A. Hodges, Richmond.—p. 322.
Early Recognition of Syphilis. S. H. Graves, Norfolk.—p. 328.
Diagnosis of Focal Infection. B. M. Randolph, Washington, D. C.—p. 330.
Diagnosis of Common Stomach Diseases. A. G. Brown, Jr., Richmond. p. 334.
One Hundred Prostatectomies. R. C. Bryan, Richmond.—p. 338.
Posture in Relation to Medical and Surgical Problems. J. A. Talbott, Washington, D. C.—p. 343.
*Unusual Relapse in Typhoid Fever. W. H. Higgins, Richmond.—p. 347.

Typhoid Fever Relapse After Forty-Three Days.—In 1901, Higgins' patient had a clearly defined attack of typhoid fever lasting for four weeks. In 1911 he received institutional treatment for pulmonary tuberculosis with apparently satisfactory results. In August, 1917, he was given three injections of typhoid vaccines. He remained in good health until January, 1921, when he developed a typhoid infection. His blood culture was positive for typhoid bacilli, and he ran a typical fever for two weeks, during which time rose spots appeared, and there were the usual clinical signs of an average typhoid fever without complications. After two weeks of convalescence, he returned to his work and remained well until March 23, when he had a chill followed by a temperature of 103 F. Blood culture and Widal reaction were negative. Leukocytes numbered 7,000, with normal differential count. Aside from slight headache, there were no subjective symptoms, and the fever persisted for twelve days with the usual typhoid variations. During this period, successive crops of rose spots appeared over his abdomen and, for the first time, his spleen became palpable. The diagnosis of a true relapse was made in accordance with the well-known dictum of Osler, to the effect that a relapse must be characterized by at least two or three important features of the disease; namely, a characteristic fever curve, enlargement of the spleen and rose spots. A fairly complete survey of the literature showed that Higgins' patient had next to the longest interval between attacks on record.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Sept. 3, 1921, No. 3166

Educational Number.

Sept. 10, 1921, **2**, No. 3167

*Acute Pleural Empyema. H. Wade.—p. 385.
*Intussusception: An Analysis of Thirty-Six Cases. G. H. Edington.—p. 391.
*Best Method Operative Approach in Cases of Acute Appendicitis. H. Ballance.—p. 394.
Early Diagnosis and Treatment of Meningitis Occurring in Aural Cases. C. Ballance.—p. 399.
Otitis Media. W. Sallisbury-Sharpe.—p. 403.
Zinc Ionization in Treatment of Suppuration in Maxillary Frontal, and Sphenoidal Sinuses. A. R. Friel.—p. 404.
Harelip and Cleft Palate: War Influence. J. L. Aymard.—p. 405.
Case of Delayed Chloroform Poisoning. A. Merrin.—p. 405.
Nerve Cell Degeneration. H. W. Eddison.—p. 406.

Acute Pleural Empyema.—Wade urges that a combined cytologic and bacteriologic examination of the fluid withdrawn should be employed more widely, as offering the prospects of affording fuller and more accurate data on which to found operative treatment. Suppuration within the pleural cavity is especially suitable for treatment by methods which obviate the necessity for opening the chest, or by methods where an immediate or early closure after it has been opened are carried out. The value of the treatment by aspiration alone should be reviewed. The value of methods where, after aspirating the content, an antiseptic is introduced, should be considered further. Where simple drainage is practiced the ideal opening is not only one which allows free escape of the purulent content at the time, as when a rib is resected, but it should also be such as will readily seal itself off when the tube is withdrawn, as when minor intercostal thoracotomy is performed. The benefits to be derived from a free opening of the pleural cavity by major intercostal thoracotomy warrant its employment in cases which give promise of developing into chronic and persistent cases. The value of disinfection and immediate closure in these cases should be tested more fully. Wade considers the Rutherford Morison technic the best at present available for carrying out the same.

Analysis of Cases of Intussusception.—Edington has operated on thirty-six patients in the last eleven years. In thirty-five cases in which the result was recorded there were twenty-one recoveries and fourteen deaths. Of twenty-four patients operated on the first day, sixteen recovered; of nine patients operated on after the first day three recovered. The period after operation in recovery cases varied from two and a half hours to five days. These figures support the general view as to the value of the time element in estimating results; but they also show that time is not all important. In three cases death occurred within a few hours after operation, and apparently resulted from shock. One patient died on the twenty-second day from gastroenteritis. In the remainder death occurred from twelve to fifty-five hours. Death was usually preceded by a rapid rise of temperature and the facies was that of toxemia. The relationship of death to anatomic type was: ileocecal, 7 cases, 2 deaths; ceco-ileocecal, 6 cases, 2 deaths; colocolic, 5 cases, no deaths (result in one case not recorded); ileocolic, 4 cases, 2 deaths; ileo-ileal, 4 cases, 4 deaths; ileocolic ileocecal, 3 cases, 2 deaths; ileo-ileal, ileocolic, 3 cases, 2 deaths; ileo-ileal, ileocolic, ileocecal, 3 cases, no deaths; type not recorded, 1 case, no death. Visible proof of etiology was not found at operation in any case. Resection gave invariably fatal results.

Best Incision in Acute Appendicitis.—In cases of acute appendicitis in the first few days of the illness, Ballance makes what is virtually a McBurney incision and divides all the muscle layers of the abdominal wall because this operation meets all indications. An appendix in any position can be removed through the incision. By an extension of the wound down and in, the appendix hanging down into Douglas' pouch can be sought for and removed and the pelvis drained. By an extension up and out the appendix can be exposed when it is lying just below the liver, and through the middle of the incision the appendix in intermediate positions can be dealt with.

Indian Journal of Medical Research, Calcutta

April, 1921, **8**, No. 4

Flagellates of Genera Herpetomonas, Crithidia and Rhynchoidomonas. II. Crithidia Ctenocephali Sp., Nov., Parasitic in Alimentary Tract of Ctenocephalus Canis Curtice. W. S. Patton and S. Rao.—p. 593.
Id. III. Rhynchoidomonas Siphunculinae Sp. Nov., Parasitic in Malpighian Tubes of Siphunculina Funicola de Meijere. W. S. Patton.—p. 603.
Id. IV. Herpetomonas Siphunculinae Sp. Nov., Parasitic in Alimentary Tract of Siphunculina Funicola de Meijere. W. S. Patton.—p. 613.
Id. V. Herpetomonas Pulicis Sp. Nov., Parasitic in Alimentary Tract and Malpighian Tubes of Pulex Irritans L. W. S. Patton and S. S. Rao.—p. 621.
Id. VI. Behavior of Herpetomonas Pulicis Patton and Sundara Rao, Crithidia Ctenocephali Patton and Sundara Rao and Herpetomonas Muscae Domesticae Burnett in Bed Bug, Cimex Hemiptera Fabr. W. A. Patton, H. M. La Frenais and S. Rao.—p. 629.
*Rôle of Meteorology in Malaria. C. A. Gill.—p. 633.
Naga Sore: Cachar Boil. E. C. R. Fox.—p. 694.
Peculiarity in Spleen Rate Observed in District of Chittagong Hill Tracts. S. L. Sarkar.—p. 700.
Influence of Age and Temperature on Bacterial Vaccines. W. F. Harvey, K. R. K. Iyengar and S. R. Christophers.—p. 715.
Viability of Bacterial Cultures. N. Lal.—p. 728.
Re-Use of Culture Mediums. N. Lal.—p. 731.
Preservation of High Titer Agglutinating Serum and Corresponding Antigen. G. Macfey.—p. 733.
*Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Values in Connection with Hookworm Inquiry in Madras Presidency. J. F. Caius and K. S. Mhaskar.—p. 737.
*Value of Quinin Prophylaxis. H. W. Acton.—p. 741.
Diagnosis and Treatment of Benign Tertian and Malignant Tertian Fevers. I, II and III. H. W. Acton, D. F. Curjel and J. O. Dewey.—p. 750.
Id. IV. What Constitutes a Cure. H. W. Acton.—p. 774.
Id. V. Effect of Quinin on Benign Tertian Infection. P. M. Rennie, H. W. Acton, D. F. Curjel and J. O. Dewey.—p. 787.
Id. VI. Effect of Repeated Courses of Quinin on Benign and Malignant Tertian Parasites. H. W. Acton, D. F. Curjel and J. O. Dewey.—p. 853.
Id. VII. Curative Value of Total Alkaloids (Cinchona Febrifuge) of Cinchona Bark on Benign Tertian Infections. H. W. Acton, D. F. Curjel and J. O. Dewey.—p. 861.

Rôle of Meteorology in Malaria.—The conclusions reached by Gill appear to warrant the statement that great importance attaches to the influence of meteorology in malaria. It has been shown that meteorologic factors, through their influence on the malaria parasite and on its insect host, exercise an important influence on the transmission of infection and consequently on the incidence of the disease. It seems justifiable to Gill to conclude that the science of meteorology, which fulfils such important functions in connection with many human activities, may justly claim recognition as an important ancillary to medical science.

Composition and Therapeutic Value of Anthelmintics.—The results obtained by Caius and Mhaskar have shown that: (1) hydrocarbons, polyhalides, alcohols, aldehydes, ketones and alkaloids have failed to exhibit anthelmintic properties; (2) narcotics, associated with a purgative, may prove efficient drugs for the expulsion of hookworms; (3) anthelmintic properties have been met with in oxids, peroxids, and phenols; (4) oxids have weak vermicidal, but no vermifugal properties; (5) peroxids are potent vermicides, but have no vermifugal action; (6) phenols have both vermicidal and vermifugal properties; (7) the anthelmintic power associated with the phenolic group may be partially or wholly inhibited by the presence of substituting radicals in the benzenoid nucleus; (8) the highest anthelmintic power has been found in monophenols of disubstituted benzene compounds.

Value of Quinin Prophylaxis.—Acton endorses the value of quinin as a prophylactic measure in malarial fevers. Prophylaxis should be commenced when the minimum wet bulb temperature is approximately between 18 and 22 C., and ended when the temperature for some days exceeds or is lower than this optimum flagellation temperature. The administration of quinin should be continuous, i. e., every day or, at the most, every other day. The dose should be a curative one, i. e., from 10 to 15 grains.

Japan Medical World, Tokyo

Aug. 15, 1921, **1**, No. 4

*Pulmonary Distomiasis which Caused Brain Symptoms in Children. R. Kawamura and M. Yamaguchi.—p. 1.
First Intermediate Host of Echinochasmus Perfoliatus Var. Japonicus. M. Muto, Nagoya.—p. 7.
Substance in Blood Essential for Culture of Influenza Bacillus. M. Terada.—p. 8.
Supernumerary Breasts, with Report of Case. M. Thorek.—p. 10.

Brain Symptoms Caused by Pulmonary Distomiasis.—Thirty-six cases with brain complications are reported by Kawamura and Yamaguchi. The distoma egg was found in the sputum in eight cases. A part of the infection is caused by drinking fresh water, but the majority of infection takes place by eating raw or half broiled crabs which are infected with cercariae. These cases had been diagnosed variously by local physicians as cerebral infantile paralysis, encephalitis or acute meningitis. The disease begins with sudden severe headaches, vomiting and dizziness. In many cases there are epileptic attacks with loss of consciousness and at times with delirium. At times there are also tonic or clonic spasms with aphasia or motor paralysis. These attacks are repeated several times and may last even ten or fifteen days. Some of the epileptic attacks are distinctly jacksonian in type. Various symptoms at the time of the onset disappear gradually, but some of the cases may retain disturbances of sensations or movements of extremities. In rare cases aphasia may develop or disturbances or loss of sight. Mentality is weakened in some cases and in the worst cases the patients become idiotic. During the period of these attacks not a few die. More than half of the patients have physical signs in the chest and distoma eggs in the sputum.

Lancet, London

Sept. 10, 1921, **2**, No. 11

*Aims and Boundaries of Physiology. W. M. Fletcher.—p. 541.
Re-Education of Blinded, with Special Reference to Blinded Sailor and Soldier. A. Lawson.—p. 544.
*Significance of Some Early Symptoms of Nervous Disease. J. S. Bury.—p. 549.
*Studies from St. Andrews Institute of Clinical Research. I. Present State of Medical Knowledge Regarding Diseases Common Among People. A. Rowand.—p. 551.
Psychopathology of Pulmonary Tuberculosis, with Special Reference to Treatment. D. G. Macleod.—p. 556.
*Use of Luminal Sodium in Epilepsy. J. T. Fox.—p. 558.
Purulent Pericarditis Simulating Angina Pectoris. M. A. Cassidy, R. O. Moon and F. Le Q. Pelly.—p. 559.
*Early Progress of an Infant of Abnormally Small Weight. F. C. Davidson.—p. 559.
Case of Bullous Eruption Caused by May Weed. J. H. Sequeira.—p. 560.
Case of Congenital Absence of Right Pectoralis Major. A. G. M. Severn.—p. 560.

Aims of Physiology.—In the rapid growth of medical schools throughout the English-speaking world Fletcher says there are distinct signs that the essential part which physiology plays in medical education and study may wrongly masquerade as the only service physiology has to give to man, and may appear to fill the measure of her rightful status. In more than one of the great American universities physiology is treated either in theory or in practice as a subject within the medical faculty to be housed within the medical school, yet at the same time not as a subject in the faculty of arts or of science, nor to be studied alone or with other sciences as part of a liberal and nonprofessional education. It is rare in the United States for physiology to be studied by any but professed medical students, and there is some reason to think that it is becoming rarer in Great Britain than it was a few years ago. Men coming to physiology as a "preliminary subject" and nothing more are not likely to think of it as their life work, but will pass through it not to return.

Early Symptoms of Nervous Diseases.—Pain, numbness, motor disability and the plantar reflex are discussed by Bury in their bearing on an early diagnosis of nervous diseases. He is of the opinion that not enough consideration is given to the analysis of subjective symptoms.

Percentage of Error in Diagnosis.—Rowand reports on an inquiry made as to what proportion of cases met with in general practice are diagnosed correctly. It is shown that in not more than 38 per cent. is the condition recognized. In institutional practice the percentage is higher than in private practice. In 374 institutional cases a correct diagnosis was made in 38.21 per cent.; whereas in 660 private cases a correct diagnosis was made in 23.48 per cent.

Luminal Sodium in Epilepsy.—Sixteen cases of ordinary epilepsy in children or adolescents were chosen by Fox for an investigation of the value of luminal sodium in epilepsy. The patients were all liable to major attacks at fairly regular intervals, and none showed signs of marked mental defect or deterioration. Most of the patients were taking bromid when the luminal was started, and the daily dose, which in no cases

exceeded 30 grains, was continued. The luminal sodium was given in 1 and 2 grain doses once daily usually at bedtime. In five cases the general mental condition of the patients was apparently unchanged; three patients were reported as being rather more irritable than formerly, while four were evidently more cheerful and alert. One patient, a girl of 15, has become distinctly more dull since taking luminal sodium. Her fit record shows less improvement than that of any of the other patients, and her increase in weight is correspondingly small. Two boys, aged 13 and 11, respectively, became sleepy after taking the drug for a few days. In both cases the dose was too large, and improvement followed on its reduction.

Rapid Growth of Abnormally Small Child.—The child described by Davidson weighed 1 pound 6 ounces at birth. The pregnancy was of about thirty-two weeks duration. For the first forty-eight hours the child was fed hourly with small quantities of a whey and cream mixture (3 ounces in twenty-four hours) and on third day feeding with breast milk was commenced. The child was laid to breast at feed times from birth as a routine although too weak to suckle. Immediately after the establishment of lactation on third day breast pump was used and breast milk so withdrawn was given to child by pipette or spoon 1 dram, every two hours, for first few days—increased in three weeks to 6 drams, every three hours. At the end of the second week, the child weighed 1 pound 14 ounces; end of third week, 2 pounds 10 ounces; end of fourth week, 3 pounds ½ ounce.

Medical Journal of Australia, Sydney

Aug. 6, 1921, **2**, No. 6

*Clinical Significance of Absent Hydrochloric Acid in Gastric Contents. J. F. Wilkinson.—p. 93.
*Anesthetics and Their Administration. M. K. Moss.—p. 96.
Heat Losses of Body Connected with Surgical Operations Under Ether Anesthesia. C. E. Corlette.—p. 98.
Extroversion of Bladder. A. A. Lendon and H. S. Newland.—p. 103.

Significance of Absence of Hydrochloric Acid in Stomach Contents.—Wilkinson urges more frequent examination of the stomach contents for hydrochloric acid and enumerates many conditions in which it is absent and in which administration of the acid gives relief and even leads to a cure.

Resuscitation After Anesthesia.—Moss uses for artificial respiration rapid pushes over the sternum. Sylvester's method, he says, is irrational. The sternal compression method rapidly ventilates the lungs. Should the heart fail, he injects either strychnin, pituitary extract or atropin directly into the heart muscle.

Annales de Médecine, Paris

July, 1921, **10**, No. 1

*Paroxysmal Tachycardia. Daniélopolu and V. Danulesco.—p. 1.
*Tuberculous Meningitis. Riser and Roques.—p. 10.
*Surface Tension of Urine. E. Doumer.—p. 26.
*Fasting in Treatment of Diabetics. M. Labbé.—p. 32.
*Cancer Statistics 1901-1906. E. Jeanselme and A. Barbé.—p. 58.

Mechanism of Paroxysmal Tachycardia.—Daniélopolu and Danulesco report from Bucharest a case of pulsus alternans in a man of 50 who developed heterotopic tachycardia after a subcutaneous injection of epinephrin. The tachycardia had all the electrocardiographic characteristics of paroxysmal auricular tachycardia, and they seek to explain the mechanism.

Tuberculous Meningitis Simulating the Epidemic Form.—In the three cases described, the polynucleosis in the lumbar puncture fluid and clinical signs of subacute epidemic meningitis seemed to justify intraspinal serotherapy. The whole developed rapidly and proved fatal in a few days in the man of 35, and the two children of 2 and 13. The meningitic symptoms did not appear in the older child until the tenth day of the general malaise and loss of appetite, with death the eighteenth day. A profuse fetid diarrhea was almost the first symptom in each case. The polynucleosis of 82, 83 and 53 per cent. showed most of the cells intact, which testified to toxic action rather than to abundance of the bacilli. No tubercle bacilli were found in the spinal fluid of the adult and only a few in the older child. Riser and Roques have compiled from the records 76 cases of tuberculous meningitis with polynucleosis but only 59 are reliable with polynucleosis of over 20. All terminated fatally with one exception, and the course was rapid in all but 8 in which it was over twenty days. In the absence of tubercle bacilli in such cases, the reduction of the chlorids is an aid in differentiation, but in case of doubt they advise injection of antimeningococcus serum as it cannot aggravate the inevitably fatal prognosis of tuberculous meningitis.

Surface Tension of the Urine.—Doumer describes how to measure the substances reducing the surface tension of the urine, and emphasizes its clinical import in respect to the bile salts, etc.

Fasting in Treatment of Diabetes.—Labbé has been making a critical study of the effect of fasting in treatment of diabetics, and concludes that in the cases without emaciation it allows the sugar content not only of the urine but of the blood to be brought back to normal. But when there is denutrition, this cannot be realized. Even if the glycosuria and acidosis are arrested, the effect is transient and they soon return. This transient and provisional effect is gained at too great expense; the patient is not rendered more resistant, and the evolution of the disease is not checked. In two of his patients thus temporarily improved, he was surprised at the brutal way in which coma developed soon after. The fasting treatment with denutrition should be reserved for acute accidents. In the premonitory period of coma in attacks of acidosis, fasting need not be feared, for it always mitigates the acidosis. But it is useless to impose repeated periods of fasting on these patients. Fasting is rarely necessary in diabetes with denutrition, and it should always be rational, not a routine procedure, and should always be carefully supervised.

Cancer Statistics.—Jeanselme and Barbé state that they have devoted several months to research on the 1,501 cases of cancer at the Tenon Hospital during the six years ending with 1906. The occupation, age, organ, residence and other details are tabulated. At first glance it seems that certain quarters and certain buildings showed an exceptional proportion of cancers, but investigation proved that these quarters and buildings were so densely populated that the actual per capita percentage was no higher than the average elsewhere.

Bulletin Médical, Paris

Aug. 20, 1921, **35**, No. 34

*Mental Hygiene. Toulouse.—p. 667.

Mental Hygiene.—This is the address on curable and avoidable insanity delivered by Dr. Toulouse, president of the Ligue d'Hygiène Mentale, at the recent public meeting of the league. He explained that the human mind is still very imperfect, still in the embryonal stage. It is the least perfect of the physiologic functions, and the most fragile in the present stage of its evolution, but he protested against the prevailing impression that mental disease is incurable. Acute mania of the confusional type is usually the result of physical or emotional exhaustion, and recovery is the rule after about five months of peace and tonics and nourishing food. The restoration is more complete than after typhoid or tuberculosis, and the tendency to recurrence is no greater than with acute articular rheumatism. He describes various measures that have been introduced in the United States and urges their adoption in France, saying that a beginning has already been made by an open service for mental disease at the Paris Ste.-Anne Asylum like the one for the soldiers during the war. He warns against forcing children in school, saying that the school should be a garden where brains come to flower in all liberty, not a cemetery for brains. But cramming for examinations and worrying about them are the best means to bring on the constant fatigue which seems to favor development of dementia praecox.

Journal de Médecine de Bordeaux

Aug. 10, 1921, **92**, No. 15

*Reconstruction of Muscles and Tendons. Charbonnel.—p. 437.
*Mastoiditis in Children. Cadenaule and Retrouvey.—p. 445.

Reconstruction of Muscles and Tendons.—Charbonnel reviews the broad field of operative reconstruction of muscles, aponeurosis and tendons. His illustrated article is one of a course of graduate lectures on orthopedic surgery.

Recurring Mastoiditis.—The mastoiditis developing a long time after the first attack with apparently complete recovery

runs a course like the primary disease. The trephined bone is usually thinner at this point and the recurring mastoiditis causes bulging of the skin in an earlier stage, so that the osteitic process is found less advanced than at the primary disease. One of the three children whose cases are described here has had to be operated on four times for three returns of the disease in four years and a half since the first operation at the age of 3. This case emphasizes the necessity for restoring clinically normal conditions in the nose and throat as an indispensable supplement to the mastoid operation.

Lyon Médical, Lyons

Aug. 10, 1921, **130**, No. 15

*"Ultra-Rapid" Treatment of Gonorrhea. L. Phélip.—p. 673.
*Writing of Prescriptions. B. Lyonnet.—p. 709.

Rapid Treatment of Gonococcus Urethritis. — Phélip declares that those who try the method he has been applying for a year will be amazed at the facility, the brilliant results and the certainty of this technic, judging from his experience in ten cases. It consists in the ionization of 10 c.c. of a 1 to 3 per cent. solution of a silver salt introduced into the previously cocainized urethra. He never uses more than 30 volts, and does not give over three or four ionization sittings.

Prescription Writing.—Lyonnet enumerates a long list of common blunders in prescription writing, and tells how to avoid them. He quotes the resolution adopted by the Paris Société de Pharmacie to the effect that in prescribing alkaloids, to avoid errors, the name of the alkaloid should be written first and then, in a parenthesis, the name of the acid. For example, quinin (sulphate), not quinin sulphate; morphin (hydrochlorid).

Médecine, Paris

August, 1921, **2**, No. 11

*Recent Progress in Pediatrics. P. Lassablière.—p. 821.
*Typhoid Fever in Children. P. Nobécourt.—p. 828.
*Mongolian Idiocy. J. Comby.—p. 835.
*Whooping Cough. É. Weill.—p. 841.
*Acute Pericarditis in Children. L. Baumel.—p. 843.
Diets for Growth. G. Mouriquand.—p. 847.
*Gastro-Intestinal Hemorrhage in New-Born. J. Andérodias.—p. 854.
Subacute Rheumatismal Endocarditis in Children. P. Halbron.—p. 856.
Examination of the Blood in Infants. G. Blechmann.—p. 861.
*Adenoids in Infants. G. L. Hallez.—p. 866.
Medical Inspection of Schools in France. Dufestel.—p. 868.
School Lunches. R. Gaultier.—p. 872.
Open Air Schools. J. Génévrier.—p. 874.
Physiologic Variations in Composition of Milk. Lassablière.—p. 877.
Treatment of Obesity in Children. Minvielle.—p. 880.
Treatment of Whooping Cough. P. Lassablière.—p. 883.
Treatment of Acute Pulmonary Disease. P. Lassablière.—p. 885.
*Bismuth Carbonate in Treatment of Oxyuriasis. Hallez.—p. 889.

Recent Progress in Pediatrics.—Lassablière reviews a number of recent important works by French pediatrists, most of which, by Marfan, Nobécourt, Comby, Weill and others have been summarized in these columns. Panisset has called attention to the danger of foot-and-mouth disease being transmitted in milk to children and urges a change to condensed milk in times when it is prevalent. Lassablière says that he has never seen a case of scurvy in an infant fed on good condensed milk, and his research on guinea-pigs has confirmed that sweetened condensed milk retains all its antiscurvy properties; a dose of 5 c.c. of the condensed milk, diluted 1:4, proved sufficient to ward off scurvy in the animals fed on wheat and sterilized hay. Hume's recent experience has also confirmed this, contrary to the assertions of Hopkins and of Hess. The excess of sugar in condensed milk explains the way in which young infants thrive on it, Monrevaux having recently reported excellent results from the use of a 10 or 15 per cent. solution of saccharose in nutritional and digestive disturbances in infants. Among the more recent important works is Lesage's study of arthritism in children. He defines it as an abnormal deviation of nutrition for which the liver is primarily responsible, but this deviation is characterized not only by arrest of the decomposition of the purin bodies but by insufficient oxidation of the bodies of the fat series, which stops at the ketone stage in children. Nobécourt found the pneumococcus in 177 of 322 mothers and babes in the Maternity. The proportion was from 61 to 79 per cent. between November and June, but only 18 per cent. the rest of the year. In nurslings, the pneumococcus in the nose and pharynx may not induce any appreciable symptoms, but usually there are general symptoms with rhinopharyngitis. Intrapulmonary injections of antipneumococcus serum have caused disturbances in some cases. Better results might be anticipated with an oil vehicle for the antiserum. Active vaccination may prove a useful adjuvant to meningococcus antiserum in treatment of meningitis. Weill proposes to utilize the anaphylactic shock in treatment of the pyretic cachexia of cerebrospinal meningitis. In Blechmann's case there was pus in the cranial subarachnoid space as well as in the ventricles, and the antiserum was injected into this space.

Typhoid Fever in Children.—Generally benign in children, yet the mortality averages 10 or 12 per cent. Nobécourt relates, in comparison to the 16 to 18 per cent. mortality in adults.

Mongolian Idiocy.—Comby has observed that the mongolian imbecile is often the last child of a large family, the mothers physically exhausted or worried. Hence this type of idiocy is rare in countries with a low birth rate. He gives thyroid extract systematically in all such cases, and has noted decided benefit from it although nothing like the miracle in myxedema.

Whooping Cough.—Weill has been proclaiming since 1894 that whooping cough is contagious above all in the premonitory period, and becomes less and less contagious until there is no further contagion in at most two weeks after the onset of the whoop. Whooping cough in the service never spread as the children with it are not brought to the hospital until the spasmodic cough develops, and by that time the contagious period is past. No contagion occurred among 104 children tested by the closest living in contact with 26 whooping cough children. Some of these children during the years since have contracted whooping cough elsewhere. One month of isolation from the very first coughing is ample for prophylaxis, he reiterates.

Acute Pericarditis in Children.—Baumel warns that a little nausea or vomiting may be the only symptom unless one notices that the pulse is weak and depressible and the heart sounds deep or at least attenuated. He is convinced that insidious pericarditis is far more common than generally supposed, and that it frequently follows left pleurisy with effusion. Administration of digitalis and iodid is important to ward off adhesive sequelae. He recently diagnosed adhesive pericarditis in a year old infant with a precordial murmur covering the entire revolution of the heart. There are also indications of patent ductus arteriosus, the cyanosis being congenital, while the pericarditis dates from the sixth month. The child's father has rheumatism and heart disease.

Gastro-Intestinal Hemorrhage in the New-Born.—The child may have swallowed blood during delivery or the blood may be traced to a crack in the nipple, and certain drugs may turn the stools black. If syphilis is responsible for the hemorrhage, mercurial inunction, etc., are effectual but slow. Rocaz advocates subcutaneous injection of 1 cg. of neo-arsphenamin per kg. of weight twice a week. He gives 0.15 c.c. in 1 c.c. of a 0.01 per c.c. solution of procain, suspending for fifteen or twenty days after a series of twenty injections. If laboratory tests show normal bleeding time and very slow coagulation, 10 c.c. of horse serum or diphtheria antitoxin or fresh human serum or citrated whole blood can be injected into a vein or cranial sinus or subcutaneously. Every five or six hours 15 or 20 c.c. of blood can thus be injected until the hemorrhage stops. The infant must be kept still, to ward off syncopes, and be kept warm with hot water bottles or in the incubator. For stimulants, camphorated oil and ether may be useful, and 20 or 30 c.c. of physiologic saline daily, by the rectum or subcutaneously. Regular feeding should not be resumed until certain that the hemorrhage is over. Then the child rapidly recuperates.

Adenoids in Nurslings.—Hallez remarks that the adenoids may be congenital or develop after recurring coryza. Before the age of 4, surgical measures are seldom indicated, he says, on account of the almost inevitable recurrences, unless one's hand is forced by inflammation or otitis or bronchopulmonary complications, or the obstruction of the passages interferes with feeding. A little stretching with forceps may be enough to open the passage, and calcium and epinephrin given

(2 drops of 1:1,000 epinephrin two or three times a day), with local measures.

Bismuth Carbonate in Treatment of Oxyuriasis.—Hallez quotes Loeper's recommendation of bismuth carbonate as a harmless and usually effectual means to exterminate oxyurids. He gives from 2 to 10 gm. a day to adults; 4 gm. to a child of 7, and 2 or 3 gm. to a younger child.

Paris Médical, Paris

July 23, 1921, **11**, No. 30

*Medical Responsibility. Courtois-Suffit and F. Bourgeois.—p. 73.
*Pneumococcus Endocarditis. R. Lutembacher.—p. 85.
*Intercricoid—Thyroid General Anesthesia. G. Rosenthal.—p. 86.

Medical Responsibility.—This general review is preceded by an appeal from a lawyer for consultation of three medico-legal experts in all cases involving medical responsibility. The testimony of one alone does not have the same authority. Suffit and Bourgeois comment on the increasing numbers of damage suits brought against physicians, saying that these attacks are almost always from charity patients. The history of medical responsibility in the French courts is almost a constant series of absolutions, as the medical man is not held responsible unless there has been a grave error evident to any one with common sense. A Château-Thierry court condemned in 1905 a physician to 8,000 francs damages claimed on account of the death of a young man under chloroform while a dislocated shoulder was being reduced. The court held that the physician should have informed the young man of all the dangers of chloroform, and advised him to bear the dislocation rather than risk the anesthesia. The court of appeal reversed the decision, saying that as the danger of sudden death is enhanced by the impressionability of the patient, it is the physician's duty to reassure him, not frighten him still more. At the first suit brought on account of sudden death under chloroform, Velpeau in his appeal to the court said "You hold in your hands the future of surgery, and this is a question in which the public more than the medical profession is vitally interested." They remark parenthetically that instances are known of sudden death under ethyl chlorid; a case with legal consequences has recently been reported. Neglect to supervise an overtight plaster cast, a hypodermic injection without disinfection of the skin, roentgen irradiation with apparatus with which one is not familiar, omission of general examination before giving arsenicals, large doses of cocain, etc.—these are examples of malpractice that any one with common sense would condemn. But they are extremely rare. The experts must realize that a medical diagnosis is usually merely a hypothesis; what the physician tries to do is to select the most plausible hypothesis.

A suit for malpractice is a serious injury for a physician even when the baselessness of the attack is demonstrated in the courts. Public opinion and gossip, derogatory comment in the public press, smirch even when they do not burn, and no one is safe from unjustified attacks. A number of specific examples are cited. Among them are instances of damages asked because the physician "did not call often enough"; or because the physician did not operate on the woman's stomach when another physician later did operate, and she claimed an earlier operation would have been better; or because the physician did operate and the patient (charity) deemed the operation two years before to have been useless; or because a grave fracture of the tibia healed with 1 cm. of shortening. This last case dragged for three years through the courts. Damages of 6,000 francs were assessed against a physician who had yielded to the pleading of a "tattooed man" and removed the pigment from his face and hands (without charge). The man failed to apply massage, etc., as ordered, and he sued and obtained damages for the resulting stiffness of his fingers. One man sued for 50,000 francs after an interval of twelve years claiming that the neglect to place in a splint the limb being treated for phlebitis was responsible for certain complications.

The long list of such suits shows that the laity hold the physician responsible for all the unfavorable happenings that may develop in the course of any disease. So much is written and said of the progress of science that the public has come to believe it almost infallible, and ascribes all mishaps to the negligence or ignorance of its high priests. Having the patient or parent sign a paper releasing the physician from responsibility is useful to the extent at least that it renders them less liable to sue for damages thereafter. Le Bec has had considerable experience with such attacks, and he relates that in a recent case when a young man died at the beginning of an operation for cleft palate and the family threatened the surgeon with a suit, the surgeon replied that unless the suit was dropped he would have the family history investigated for deformities, epilepsy, insanity, and penal offences. He heard no further from that family. In another case a bride's wedding present was a vaginitis with bilateral purulent salpingitis. He sent for the husband to consult with him, but the husband refused to come and sent word that he consented to any operation deemed necessary. Four months later the bride denounced the surgeon for having done the required operation, the husband saying he "would not have allowed it if he had known." Le Bec told her, "Bring your husband to me and I will explain to you in his presence the origin of your ills." Nothing more was heard from either. In conclusion a number of instances are described in which the decision of the courts was unjust and disastrous. The courts, too, are not always careful enough in weighing in advance the claims presented to sift out the unmistakable frame-ups. Even when, as in one of the instances cited, the case was finally decided in the physician's favor after ten years of appeals, the plaintiff being irresponsibly indigent, the physician had to pay the costs of the suit which totaled over 1,349 francs.

Pneumococcus Tricuspid Insufficiency.—Lutembacher found recent vegetations on the tricuspid valve, accompanying recent pneumococcus pneumonia, at necropsy of the man of 64. The pneumonia ushered in the clinical picture but the endocarditis soon followed.

Intercricoid-Thyroid General Anesthesia.—Rosenthal introduces a cannula into the trachea between the cricoid cartilage and the thyroid. This allows safe and regular anesthetization no matter what is being done to the face or throat. He prefers ethyl chlorid for the purpose, and insures a brisk current by giving a jet of oxygen with it. Ether or chloroform can be given instead. A gas, he says, is better adapted for intratracheal administration than a fluid.

Schweizerische medizinische Wochenschrift, Basel

Aug. 25, 1921, **51**, No. 34

*Vital Stain for Human Eye. O. Knüsel and P. Vonwiller.—p. 777.
*Arteriosclerosis of Vessels in the Skin. S. Watanabe.—p. 780.
*The Blood in Influenza. W. Rütimeyer.—p. 784.
*Intradermal Vaccination. W. Hoffmann.—p. 790.
Mutilating Customs Among Nubians. W. G. Fröhlich.—p. 791.

Vital Stain for Human Cornea and Retina.—Knüsel and Vonwiller instill neutral red in the eye, and the epithelium takes up the stain and permits direct inspection of its finest structures by this means. It does not interfere with vision, and they have seen no evidence of the slightest injury in the twenty persons treated in this way except when the amount instilled was intentionally made excessive. Tests of protozoa and laboratory animals have apparently confirmed the harmlessness of neutral red. In man it renders visible the structure of the epithelium which has hitherto been invisible, and it has permitted study of certain physiologic and pathologic phenomena. The staining is done with 1 drop of a 1 per cent. aqueous solution of neutral red instilled every one or two hours. The stain is taken up by the tissues; none passes off into the nose. The staining can be kept up for a week or two without harm. Six views of the microscopic findings are shown.

Arteriosclerosis of the Vessels in the Skin.—Watanabe tabulates the findings in 116 cases. Only in twenty-one cases was arteriosclerosis evident in the vessels in the skin; in all the others the vessels affected were in the subcutaneous layer.

The Blood in Influenza.—Rütimeyer gives the details of the differential blood count in large numbers of influenza cases, classified by the course and outcome.

Intracutaneous Vaccination.—Hoffmann endorses Leiner's method of injecting the vaccine into the skin instead of applying it to the scarified skin. The needle is introduced for 0.5, 1 or 1.5 cm. parallel to the surface of the skin. The reaction is less and there is less danger of secondary infection, and no danger of infecting others, and there is less of a scar.

Annali d'Igiene, Rome

June, 1921, **31**, No. 6

*Biology of Anopheles. B. Grassi.—p. 329.
Fractioned Sterilization. E. Bertarelli.—p. 350.
*Disinfection of Dialyzing Membranes. F. de Angelis.—p. 354.
Conditions for Pure Milk Supply. G. Neppi.—p. 359.

Biology of Anopheles.—Grassi here reports extensive research on the hibernation, the feeding and the flying habits of anopheles.

Disinfection of Dialyzing Membranes.—De Angelis found that the membranes could be sterilized, so far as the staphylococcus is concerned, with 10 per cent. phenol, or 2 per cent. mercuric chlorid, or 10 per cent. solution of formaldehyd, without impairing its dialyzing properties. For anthrax spores, 20 per cent. phenol or 5 per cent. mercuric chlorid is required, and this does not affect the dialyzing property of the membranes themselves. The slow dialyzing power of toxins is not modified by the disinfection, but albumin and colloids in general are unable to pass through membranes thus treated.

Clinica Pedistrica, Modena

1921, **3**, No. 7

*Epidemic Encephalitis in Children. E. Mensi.—p. 229.

Epidemic Encephalitis in Children.—Mensi's experience has confirmed the remarkable variety of the clinical pictures induced by epidemic encephalitis in children. Even the youngest are not exempt. One of his patients was an infant of 2 years, and Cesaris-Demel has published a case in an 8 day old infant, both with necropsy. The inflammatory process and punctate hemorrhages are found mostly in the pons, peduncle and optic-striate-nucleus region. The virus is probably filtrable, but Micheli says that in one phase it can be cultivated. A number of typical cases are described, and treatment by augmenting the natural defensive forces is advocated: saline infusion, Ringer's solution, heterogenous serum and protein therapy, and lumbar puncture, etc., to get rid of toxins.

Pediatria, Naples

Aug. 1, 1921, **29**, No. 15

*Epidemic Encephalitis. S. Maggiore and M. B. Sindoni.—p. 682.
*Biologic Diagnosis of Tuberculosis. I. Nasso.—p. 690.
Congenital Atresia of the Anus. A. Vetri.—p. 702. Cont'd.

Epidemic Encephalitis.—Maggiore and Sindoni here report further cultural and clinical evidence which sustains, they say, that epidemic encephalitis and epidemic poliomyelitis are one and the same disease. The manifestations merely differ according to the regions attacked by the virus. The cocci isolated by them from cases of epidemic encephalitis correspond in every respect, they say, to those isolated by Flexner and Noguchi in acute poliomyelitis, and it reproduced the disease in rabbits.

Biologic Tests for Tuberculosis.—Nasso concludes from the findings in 10 nontuberculous and in 53 tuberculous children that the own urine test for tuberculosis is absolutely specific. He has simplified Wildbolz' technic: merely evaporating 100 gm. of urine in a broad based basin at 60 or 65 C. for three or four hours to reduce it to one tenth. The salts stick to the bottom of the basin, and 2 or 3 drops of the concentrated urine are injected as for an intradermal tuberculin test. He applied a similar test with the patient's own blood serum evaporated to a tenth in a watch-glass, and found the results instructive in the same way. This test was applied to 26 children, and this method seems preferable as the injection of the concentrated serum was never painful and never induced necrosis, but the reaction is not quite so pronounced as with the urine test.

Riforma Medica, Naples

Aug. 6, 1921, **37**, No. 32

*Superior Symphysiectomy. R. Costa.—p. 746.
Appendicitic Abscess in Abdominal Wall. A. Zaffagnini.—p. 748.
*Amaurosis in Epidemic Encephalitis. S. Mongini.—p. 750.
Wine in Surgical Antisepsis. L. de Luca.—p. 752.
*Surgery in Carotid Region. E. Aievoli.—p. 753.

Superior Symphysiectomy for Permanent Enlargement of Pelvis.—Costa's illustrations show how the excision of the top of the symphysis materially enlarges the passage. There are no important vessels in this region, and the peritoneum is not molested. He has applied this method in five cases and his assistant in two. The operation was done at the fourth month of the pregnancy in one case; in the others at the approach of or during labor. The results were extremely satisfactory in all, and there has been no disturbance in gait. The children were all born alive, except one that had been suffering before. The benefit from the operation was particularly evident in one case with a true conjugate of 7.8 cm. and the diameter of the fetal head 9.2 cm. This operation enlarges the pelvis permanently. Some of his patients had eclampsia and sepsis, but these did not detract from the success of the operation. It is indicated, he says, with a simple flat pelvis with conjugate not below 7.5 cm. When done during labor, it is better to wait until the os is completely dilated. Ten days were sufficient for healing as a rule. The portion resected was the area between the spines of the pubis, to a depth of 1 cm. from the upper margin of the symphysis, the prevesical space and bladder well protected with sponges through a Pfannenstiel incision.

Epidemic Encephalitis.—The first and the only symptom for a time in the woman of 32 was bilateral amaurosis. Then came cerebellar-bulbar disturbances, and vision gradually returned by the thirtieth day. She had three healthy children. The oculists consulted for the amaurosis noted papillitis in one eye and retinal congestion in the other. During the second month there was considerable improvement, but then came a period of pains in the lumbar region, paresis, and sphincter disturbance.

Surgery in the Carotid Region.—Aievoli surveys the experiences to date with shutting off the circulation in the carotid, especially for pulsating exophthalmos. Development of collateral circulation explains the return of the disturbances in some cases. Ligation of both common carotids and of the ophthalmic vein seems to insure more permanent results. Cauchoix's thirteen cases were not all favorable, but enough were successful to justify consideration of ligation of the ophthalmic vein as a routine procedure.

Rivista Critica di Clinica Medica, Florence

Aug. 5, 1921, **22**, No. 22

*Syphilitic Fever of Relapsing Type. B. Maggesi.—p. 253.

Syphilitic Fever of Relapsing Type.—Maggesi's patient was a girl of 9, apparently healthy until she developed attacks of high fever lasting for two or three days, with intervals of a few days. There was no chill, no profuse sweating and the general health did not seem much impaired. An eruption finally accompanied the febrile attacks, and retrogressed with them. The positive Wassermann and negative search for malaria parasites were confirmed by the cure under mercurial treatment. An attack of fever followed the first mercurial inunctions, and there were two or three more attacks, but there have been none during the months since. Maggesi ascribes to some biologic cycle in the spirochetes this relapsing or recurring fever.

Brazil-Medico, Rio de Janeiro

June 25, 1921, **1**, No. 26

*Acute Leukemia. E. Villela and C. Magarinos Torres.—p. 327.
Medical Nomenclature. A. Lima.—p. 330.

Acute Myeloid Leukemia with Proliferation in Malpighian Corpuscles.—Villela and Magarinos Torres report what they think is the first case to be published in which there was a proliferation of the reticular apparatus of the malpighian corpuscles in the spleen. The patient was a man of 28 who had acquired syphilis three years before, with suppurating bone and joint complications confining him to bed for nearly a year. The acute leukemia ran a rapidly fatal course with death in less than three weeks.

Semana Médica, Buenos Aires

July 28, 1921, **28**, No. 30

*Multiple Sclerosis, Myopia and Diabetes. O. Wernicke.—p. 97.
*Stool Sign of Foreign Body in Digestive Tract. T. A. Tonina.—p. 109.
Reform in Medical Teaching. O. L. Bottaro.—p. 111.
Necropsy Findings in Star Anise Poisoning. F. J. Pando.—p. 114.
Spanish League for Social Medicine. A. Aguado Marinoni.—p. 116.
Phrenologic Anatomy. E. Amato.—p. 117.

Intra-Ocular Sclerosis.—Wernicke presents evidence that pernicious myopia, as well as glaucoma, may be traced to

multiple sclerosis—both intra-ocular manifestations of the same process. He argues further that all the nervous disturbances observed in diabetes are evident likewise in multiple sclerosis, and that the latter may be capable of inducing glycosuria by way of the nervous system, liver, pancreas, etc. The foci of multiple sclerosis seem to spread by way of the blood. Hence the disease does not necessarily begin in the brain, and foci are liable to develop elsewhere. The probability of becoming involved is greater the larger the organ, but the symptoms therefrom depend on the function and on the sensitiveness to pain. There is much to sustain the assumption that such foci may be responsible for chronic muscular and joint rheumatism, as he explains; the foci here making their presence felt early by the pain induced in these more sensitive regions. Inability to stand cold is common to both rheumatism and disseminated sclerosis.

Serous Stools as Sign of Foreign Body.—Tonina says that the "aquarelle diaper" was first described by E. Ortiz in 1912, as a sign of irritation from the presence of a foreign body in the digestive tract of the infant. It was described in detail recently, p. 1056.

Archiv für klinische Chirurgie, Berlin

July 21, 1921, **116**, No. 1

*Postoperative Jejunal Ulcer. W. Denk.—p. 1.
*Diagnosis of Disease in Esophagus. M. Sgalitzer.—p. 53.
*The Trachea After Goiter. W. Denk and A. Winkelbauer.—p. 84.
*Brain Tumors. O. Marburg and E. Ranzi.—p. 96.
*Conservative Treatment of Surgical Tuberculosis. A. Bier.—p. 162.
*The Limits of Local Anesthesia. Braun.—p. 185.

Peptic Ulcer.—Denk analyzes the experiences with postoperative jejunal ulcer at Eiselsberg's clinic, saying that the number has constantly increased, from 12 in 1903 to 309 in 1920. It occurred almost exclusively in men. In 4 cases it developed after resection of the stomach. Alcohol, nicotin and lead poisoning may have contributed in some cases. The cause inducing the primary ulcer in the first place persists, and entails the jejunal ulcer. It is less liable after cancer than after ulcer operations, as there is less secretion and hence less erosion from gastric juice with cancer. A gastro-enterostomy for other indications than an ulcer—caustic stenosis, for example—is practically never followed by peptic ulcer. In prophylaxis, he advises resection, as often and as extensive as possible. The mortality is so low that this is no argument against it. In the latest series of 216 resections, the mortality was only 3.7 per cent. He advocates resection even when the ulcer in pylorus or duodenum has healed or is healing. There can be no peptic ulcer after the Billroth I. With existing tobacco or lead poisoning and vagotonia, long continued use of drugs to reduce the vagotonia is advisable.

Esophagus Disease.—Sgalitzer enumerates a number of minor technical points to aid in differential diagnosis with the roentgen rays and esophagoscope combined. (Twenty-three illustrations.)

The Trachea After Operations for Goiter.—Conditions in the trachea gradually right themselves as a rule in the six months following strumectomy. But occasionally the tracheal disturbances persist unmodified.

Brain Tumors.—Marburg and Ranzi review the 318 cases of brain tumors given operative treatment in Eiselsberg's service since 1901, comparing the clinical pictures with the ultimate outcome. Of the 113 cases in which the brain tumor was removed, 14 per cent. were cured and 23 per cent. materially improved, and 6 per cent. showed transient benefit. Only 10 per cent. failed to show any improvement thereafter. Essential improvement was realized in 71 per cent. of the 21 pituitary tumors; in 34 per cent. of the 50 cerebral, and 31 per cent. of the 16 cerebellar tumors, and in 18 per cent. of the 26 tumors involving the auditory nerve.

Conservative Treatment of Surgical Tuberculosis.—This address by Bier at the last surgical congress has attracted much attention. It was summarized, July 23, 1921, p. 329, when published elsewhere.

The Limitations of Local Anesthesia.—Braun concludes his study of this subject by saying that local anesthesia can usefully supplant general anesthesia in fully 50 per cent. of all operations. The main point is to determine the special indications in the individual case.

Deutsche medizinische Wochenschrift, Berlin

July 28, 1921, **47**, No. 30

Errors in Diagnosis and Treatment of Cases of Arsenic Poisoning. A. Heffter.—p. 853.
Ion Equilibrium and the Action of Poisons. S. G. Zondek.—p. 855.
Adulteration of Pharmaceutical Products. H. Fühner.—p. 857.
Auditory Disturbances Under Chenopodium. H. Evers.—p. 857.
Habit-Forming Effects of Trivalin. F. Reichmann.—p. 858.
Lipoids and Pseudonegative Wassermann Reactions. Peritz.—p. 859.
Clinical Value of Blood-Platelet Findings. V. Schilling.—p. 861.
Roentgenography of Exudative Pericarditis. Schultze.—p. 863.
Value of Desiccated Milk. L. Langstein.—p. 864.
Pertussis Serum. M. Bardach.—p. 864.
Intracardial Injections. R. Blau.—p. 865.
*Treatment of Diabetes Mellitus. Lenné.—p. 867.
Pressure Pain in the Metatarsophalangeal Joints. Schober.—p. 868.
Increased Incidence of Phagedena. F. Rosenberger.—p. 868.
Toxicoses of Pregnancy. L. Blumenreich.—p. 869.

Treatment of Diabetes Mellitus.—Lenné emphasizes that it is not the purpose of treatment to eliminate glycosuria under all circumstances. Often we must be content if we can get the diseased organism to perform its functions reasonably well, so as to improve the general condition of the patient both subjectively and objectively, even though the glycosuria persists. Many patients feel better in every way on a more liberal diet with slight glycosuria than they do on a stricter diet with sugar-free urine. If we recognize the different effects of various proteins on glycosuria, we must not forget that there is also a marked difference in the way various carbohydrates affect different types of patients. Some patients assimilate one carbohydrate better and some another; for example, it is wrong to assume that oatmeal is going to agree equally well with all patients. It will be found good for some and bad for others. The same is true of potato starch and rice starch. If on substituting other carbohydrates it is found that the capacity for improvement in assimilation has been lost, here is the time when further limitation of proteins and the introduction of fast days are indicated, after which the diseased organism takes on new strength, as is shown by a better assimilation of carbohydrates. If such reaction is waited for in vain, in spite of all measures, it is a bad sign.

Deutsche Zeitschrift für Chirurgie, Leipzig

July, 1921, **165**, No. 3-4

*Hard Tumors of Male Urethra. M. Grauhan.—p. 154.
*Treatment of Varices. W. Löhr.—p. 166.
*Resection of Colon with Gastric Cancer. C. Mau.—p. 216.
*Extraperitoneal Operations on Bladder. H. Boeminghaus.—p. 257.
*Retrocecal Hernia. H. Zoepffel.—p. 267.
*Laparotomies, etc., Under Roentgen Control. L. Drüner.—p. 275.
*Foreign Body in Gallbladder. W. Schulze.—p. 281.
*Ileus from Heart Disease. A. Sohn.—p. 285.

Hard Tumors in Male Urethra.—Grauhan compares a personally observed case with those from the literature, and warns that these tumors are usually cicatrix carcinomas. The inflammatory pseudotumors that develop above a stricture are accompanied by atypical proliferation of epithelium, and malignant transformation is so common that the portion of the urethra involved and the stricture should be resected without delay.

Treatment of Varices.—Löhr discusses the physiology, anatomy, etc., of varicose veins, and the outcome in eighty cases under various operative measures. The ultimate results all testify, he says, to the superiority of the Babcock method of extraction of the varicose saphenous vein by introduced sound, plus excision. This combination is simple and effectual, and there is no danger of recurrence.

Gastric Cancer.—Mau has resected both stomach and colon in 18 cases, and reviews 83 from the literature. Permanent survival is known in 9 per cent. which is equivalent to 29 per cent. of the 24 patients who survived the intervention of the 79 in whom the outcome is known. Even as a palliative operation, he says, the outcome is better than with mere gastro-enterostomy. The indication for the resection of the colon is the inclusion of arteries in the cancerous growth which it is impossible to free otherwise. The permanent survivals were mostly in cases of large tumors of the greater curvature.

To Insure Extensive Access to the Bladder.—Boeminghaus extols the advantages of Voelcker's method of cutting around the peritoneum most closely attached to the bladder, and then

suturing the lips of the gap in the peritoneum. This shuts off the bladder completely from the peritoneum, and the bladder is then accessible for the most extensive operations on any part of it, the pelvis raised. In the five cases described in which this technic has been applied, the tumors were located at different points in the bladder, and all were easily resected, except one palliative operation on a cancer.

Retrocecal Hernia.—The entire small intestine was involved in the hernia, and perforation of the inflamed appendix had begun to induce incarceration. The young man recovered promptly after the operation. Zoepffel knows of only fifteen cases of retrocecal hernia on record, and only ten were given operative treatment. Resection was required in only one instance.

Laparatomies Under Roentgen Control.—Drüner expatiates on the advantages of raising the pelvis or having the patient lie prone on the table with his knees on a shelf below, or lie on his back with the knees raised, to facilitate roentgen-ray control.

Foreign Body in Gallbladder.—A rubber drain used at a cholecystostomy broke and part of it slipped into the gallbladder, where it was found three years later at an operation for the "recurring gallstones" incriminated for the symptoms.

Heart Symptoms Suggesting Ileus.—Sohn was unable to find any explanation at the laparotomy or at necropsy of the man of 67 for the symptoms of ileus he had been presenting. Heart block and arteriosclerosis of mesenteric vessels, with possibly spastic or paralytic phenomena must have been responsible for the clinical picture of the fatal ileus.

Medizinische Klinik, Berlin

July 24, 1921, **17**, No. 30

*Disturbance in Urination After Fifty. V. Blum.—p. 895.
*Arsphenamin Eruptions. A. Buschke and W. Freymann.—p. 899.
*Poisoning with Anilin, Naphthalin, etc. W. Neuland.—p. 903.
*Winckel's Disease. W. Neuland.—p. 906.
*Senile Hysteria. F. Friedländer.—p. 906.
*Operations to Reduce Size of Nose. E. Eitner.—p. 908.
Tenderness in Diagnosis of Adnexitis. A. Bofinger.—p. 909.
Determination of Urea. A. Kowarski.—p. 911.
*Serology of Syphilis. E. Epstein and F. Paul.—p. 913. Begun No. 29, p. 877.
Ear Disease from Practitioner's Standpoint. K. Grahe.—p. 914. Cont'n.

Urinary Disturbances After Fifty.—Blum cites statistics which show that disturbance in urination in men is due to spinal disease in only about 5 per cent. of all cases, and in about a similar proportion to stenosis of the urethra, diverticulum or disease of the bladder. In practically all the other cases the disturbances are the result of a neoplasm in the prostate. The atrophied prostate is squeezed into a thin shell by the growing adenoma, and removal of the purely local neoplasm restores clinically normal conditions. To call this neoplasm in the prostate a "hypertrophied prostate" is not only an incorrect term but is apt to mislead one to ascribe to natural senile processes what is merely a local, removable adenoma. The age is the tumor age in general. In every phase of the prostatic adenoma it is liable to bleed easily, and the number of those that succumb to this hematuria is not small, while the Damocles sword of infection is always menacing, with its grave consequences. More than 14 per cent. of all prostatic adenomas have proved to be cancerous, he continues. During the first stage, when the only complaint is of frequent and difficult micturition, with imperious and sometimes painful tenesmus, which nothing can be found to explain, merely general hygiene and dieting should be enforced. Massage is of dubious benefit in this phase, and there is no reason for giving disinfectants for the urine and using the catheter. But active measures are required with retention of urine, hematuria or infection. The combination of both initial and terminal hematuria points to the prostate as the source. Spontaneous hematuria may follow straining at stool or at micturition, jumping from a street car, or catheterization. Cystoscopic examination is imperative after the hemorrhage is arrested. To aid in its arrest, keep the man in bed and apply the whole arsenal of internal hemostatics. If the bladder feels distended, introduce as large a catheter as possible, fastening it to keep up the compression in the urethra. If urine does not flow then, it must be aspirated, to allow the bladder to contract. If the bleeding keeps up, a suprapubic opening should be made into the bladder, and preparations made for a secondary prostatectomy. With infection installed: the retention catheter and rinsing out the bladder, with urine disinfectants internally. He states that he has repeatedly seen the best results follow intravenous injection of neo-arsphenamin or a silver salt in these cases of acute urogenous infection.

Arsphenamin Eruptions.—Buschke and Freymann report three cases in which a dermatitis of the lichen ruber type developed consecutive to a course of arsphenamin treatment. There was just enough difference to show that it was not lichen ruber. They comment on the remarkable fact that arsenic is liable to induce skin diseases of the same types as those it is often effectual in curing. It is a manifestation of the similia similibus principle, they say, which underlies parenteral therapy as well as serology and vaccine therapy.

Poisoning of Infants with Anilin, Naphthalin, etc.—Neuland refers to accidental poisoning with substances inducing methemoglobinemia. His article was reviewed editorially, page 1108. He presents arguments to show that Winckel's disease is probably an unsuspected poisoning of this kind.

Senile Hysteria.—Friedländer's case was a combination of hysteric astasia-abasia in a man of 70 with spasms of the esophagus, cardia, stomach, bowel and bladder sphincter—the spasms all traceable to intense vagotonia.

Cosmetic Operations on the Nose.—Eitner states that a small ivory frame, introduced after the subcutaneous resection of redundant bone, imparted a normal outline to the nose, and his patients thus operated on in 1913 have had no disturbance from their implant since. He describes here a method for shortening the nose, likewise without visible scar.

Serology of Syphilis.—In concluding their study of the theory of the serologic diagnosis of syphilis, Epstein and Paul emphasize that colloidal, electric and surface tension reactions are involved, not changes in the chemical structure of the reacting substances.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

July, 1921, **55**, No. 1

*Hydatidiform Mole. H. Hinselmann.—p. 1.
*Artificial Vagina. M. Frank.—p. 5.
Pathogenesis of Uterine Tuberculosis. R. Schröder.—p. 15.
*Renal Tuberculosis in the Pregnant. H. Graebke.—p. 25.
*Paralysis After Forceps Delivery. W. Kofferath.—p. 33.

Hydatidiform Mole.—Hinselmann's plate shows the atypical kariokinesis peculiar to hydatidiform mole. The edema in the villi is due to a disturbance in the development of the vessels.

Artificial Vagina.—Frank reports a case of external male pseudohermaphroditism in which the aspect and training were those of a young woman. The rectum was utilized to make a vagina, and the case teaches that the rectum should not be used if it is abnormally small or the walls thin and the sphincter muscle weak. These drawbacks were all encountered in this case, but the result was fairly satisfactory after all. The small intestine is better for the above reasons as a rule. The outcome with this was a complete success in a preceding case, but this technic requires a more complicated plastic operation.

Renal Tuberculosis in the Pregnant.—Graebke found tubercle bacilli and blood corpuscles, white and red, in the urine from the left kidney of the woman of 23, six months pregnant. This kidney was slightly tender, and an exploratory incision showed merely insignificant foci of degeneration but no tuberculous lesions. The tubercle bacilli evidently passed readily through it without inducing any lesions in it. She was delivered five weeks later of a lusty boy and has been in clinically good health since. The successful outcome in this case confirms the necessity for extra caution with signs of renal tuberculosis in the pregnant. The readiness with which the kidney in the pregnant allows passage of bacteria as well as of various substances warns to heed well the indications in considering nephrectomy.

Paralysis After Forceps Extraction.—The paralysis in the woman of 37 was on the right side and of the Erb type, and the phrenic nerve was paralyzed likewise. Roentgen ray examination cleared up the puzzling case.

Wiener klinische Wochenschrift, Vienna

July 21, 1921, 34, No. 29

Stenosis of the Intestine. J. Schnitzler.—p. 352.
Spinal Anesthesia. A. Candea.—p. 353.
Causal Significance of Facts Learned by Psychanalysis. P. Schilder.—p. 355.
*Dermatitis Among Workers in Phenol Resins. O. Sachs.—p. 356.
Experiences as Prisoner of War in Siberia. F. Hutter.—p. 356. Cont'd.

Acute Dermatitis and the Manufacture of Artificial Amber.—Sachs warns that in view of the increased manufacture of artificial amber or phenol resins (bakelite) great precautions should be taken to prevent the development of dermatitis. In the process of manufacture the fumes of phenol, formaldehyd and ammonia escape into the room. In several patients observed by Sachs the dermatitis was localized on the face, forearms and hands. Many of the patients presented also a conjunctivitis and several bronchitis. The dermatitis was accompanied by intense reddening, some swelling and exudation, and was of a severe type in most of the cases. The patients were all women, as no men were employed in the factory. Nearly all the employees were affected. Treatment consisted in the application of Burow's solution. After the acute manifestations disappeared, a bandage with an ointment of 3 per cent. boric acid in rectified wool fat or Lassar's zinc paste was applied. The course of treatment extended, on the average, over from four to six weeks. Many patients changed their employment rather than expose themselves again to the inconveniences. It is the duty of factory inspectors to see to it that the necessary ventilation apparatus is installed and that other precautionary measures are taken. This artificial amber is used in making billiard balls, buttons, etc. Some of the employees had protected themselves by smearing the face with petrolatum.

Zentralblatt für Chirurgie, Berlin

July 23, 1921, 48, No. 29

*Severing of Nerves to Combat Gastric Inflammation. W. Braun.—p. 1038.
*Encapsulation of Goiter Remnant. W. Capelle.—p. 1039.
Gastro-Enterostomy in Duodenal Ulcer. K. Borszéki.—p. 1041.
Complications of Retrocolic Gastro-Enterostomy. D. Eberle.—p. 1044.
Operative Extra-Articular Stiffening of Hip Joint. Baron.—p. 1047.
Advantages of Canoe-Shaped Goiter Sounds. J. Dubs.—p. 1050.

Nerve Division to Combat Severe Inflammation of the Stomach.—Braun remarks that in cases in which, in spite of clinical evidence of severe inflammation of the stomach and duodenum, at operation, in place of the expected prepyloric ulcer, only more or less extensive inflammatory adhesions are found, the decision as to further technical procedure is sometimes difficult. It is often a mistake to close the abdominal cavity after merely dividing a few bands. On the other hand, more serious intervention, such as exclusion of the pylorus, resection, or gastro-enterostomy, may prove to be wrong. Of late, in such cases, Braun, instead of merely dividing the bands, has sought to isolate the pyloric end of the stomach and the duodenum from its nerves and vessels, in hopes of thus being able to combat the inflammation better. He accomplishes this by detaching the omentum from the stomach over an expanse of 8 or 10 cm., thus completely isolating this part of the stomach from its vessels and nerves. This shuts off the branches of the splanchnic and sympathetic nerves, which run parallel to the stomach vessels to the stomach wall; namely, the nerve tracts that are mainly concerned in the transmission of peripheral irritations (pain and reflexes). No disturbances due to lack of blood supply and no disturbance of motility were noted. The results so far seem to warrant further trials of the method.

Encapsulation of Goiter Remnant After Goiter Resection.—Capelle found that quite often after goiter operations, especially bilateral resections, the healing process was disturbed by inflammation; not so much severe infection as low-grade suppurations, which usually give rise to troublesome fistulas. In more than 100 bilateral resections of late he has resorted to encapsulation of the goiter stump, whereby the operation wound is closed off and the secretion from it checked or stopped, which results in drying up the whole operative area. At the same time, the contraction of the tissues lessens the whole wound area. After resection of the goiter, the capsule can usually be spread out fan-shaped by means of forceps. It is then drawn up and sutured to cover the stump, as is illustrated in the original article by three clear halftones.

Zentralblatt für Gynäkologie, Leipzig

July 23, 1921, 45, No. 29

Radiology of Digestive Tract in the New-Born. E. Vogt.—p. 1030.
Extraction of After-Coming Head of Dead Fetus. W. Sigwart.—p. 1033.
Cause of Face Presentation of Acranial Monsters. Amreich.—p. 1035.
*Difficult Birth and Mental Disease. W. Hannes.—p. 1037.
Modification of Jaschke-Scherbak Milk-Pump. F. Kermauner.—p. 1041.

Connection Between Difficult Birth and Mental and Nervous Disturbances Later.—Hannes states that his investigations allow no other conclusion than that difficult births and those in which the child is born in an asphyxiated state are not any more associated with anomalous mental development and idiocy, in later life, than are normal and spontaneous births. His conclusions are based on comparison of 399 difficult deliveries with 206 normal deliveries. The mental defectives in the first group totaled 2.2 per cent. and in the normal group 3.4 per cent. The 1.5 per cent. with inherited taints in each group are not included in these figures.

Zentralblatt für innere Medizin, Leipzig

July 23, 1921, 42, No. 29

Accumulation of Fat in Supraclavicular Fossa. F. Schultze.—p. 585.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

July 23, 1921, 2, No. 4

*Technic for Frozen Sections. G. C. Heringa.—p. 428.
*After-Contraction of Muscles. J. Pinkhof.—p. 437.
*Cause of Fibrillation in the Heart. S. de Boer.—p. 445.
*Proper Candidates for Sanatorium Treatment. P. de Bloeme.—p. 450.
*Frequency of Venereal Disease, Cancer and Tuberculosis. A. Hendriks.—p. 457.
*The Optic Nerve in Epidemic Encephalitis. P. J. Waardenburg.—p. 462.
Latent Tertian Malaria. K. A. Rombach.—p. 470.
The Oswaldo Cruz Institute in Brazil. C. de Langen.—p. 493.

Preparing Microscopic Specimens.—Heringa enumerates among the advantages of what he describes as his new gelatin-freezing technic, that, as the gelatin does not harden, it is possible to remove the stain from the specimen. Also that the gelatin holds the tissues together to facilitate cutting. A still further advantage is that a large number of sections can be used at the same time. The method has all the advantages further of the freezing technic, the avoidance of alcohol, of the necessity for heating, the rapid work and the simplicity of the whole procedure. He describes it in detail.

Contraction of Voluntary Muscles After Certain Efforts.—Pinkhof discusses the mechanism and the interpretation of the involuntary raising of the arm that follows pushing sideways with the extended arm against some solid resistance. This is Kohnstamm's "catatonia test."

Cause of Fibrillation of the Heart.—De Boer offers experimental evidence to prove that hastening of the impulse so that it reaches the ventricle just at the close of the refractory period is liable to entail fibrillation. Repeated extrasystoles is thus the basis for fibrillation.

Indications for Sanatorium Treatment.—De Bloeme says that even after thirty years of the sanatorium system, it is still something of a question to determine which patients are promising candidates for sanatorium treatment. The beginning cases are not always the mildest, and many persons with incipient tuberculosis owe their impressive symptoms to some other cause, thyroidism, neurasthenia, hysteria, etc.

Frequency of Venereal Disease, Cancer and Tuberculosis in General Practice.—Among Hendrik's 2,061 patients in his sickness insurance practice at Gravenhage during the last eight years, cancer occurred in 1.37 per cent; syphilis in 4.04 per cent. of the men and in 2.61 of the women; tuberculosis in 4.8 per cent.

The Optic Nerve in Epidemic Encephalitis.—Waardenburg noted ring scotoma in one case and slight restriction of the peripheral visual field in the second case, along with paralysis of accommodation or convergence, anisocoria, transient immobility of the pupils, and disturbance in the associated movements of the eyes.

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